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THE Master Blacksmiths' Association may be congratulated on its convention held in Chicago last week. The presiding officer, F. F. Hoeffle had perfect control of the meeting at all times, skilfully guiding the members, holding them to the subjects being discussed and seeing that each one had a chance to express himself. Although the subjects were along the same lines as last year, there seems to have been enough progress during the past twelve months to make the discussion of most of them lively and interesting. One of the new subjects, Shop Kinks, gave the members an excellent opportunity for exchanging valuable ideas and illustrating various devices that they have found to be money and time savers. The men should be encouraged in this work by their superior officers, for their education will result in decreasing the shop expenses and increasing the efficiency of the shops.

AN appropriate description of the policy of the accounting department of the Pennsylvania Railroad would seem to be: intelligent and minute care in economizing labor according to the time honored methods which have always been recognized—if they have not always prevailed—in office work, combined with prompt adoption of everything that is found to possess merit in the latest mechanical inventions for saving labor and promoting accuracy. This would also be a suitable sub-title for the article on this subject, by Assistant Comptroller J. S. Donaldson, which we print in another column. Mr. Donaldson's advice concerning economies in small details is not less interesting than the judgment that he passes on the different features of the latest styles of computing machines and other mechanical devices. Electric tabulating machines are used in all sorts of statistical work; and yet he has not concentrated work in the general office, merely for the sake of building up a big central accounting establishment, as is evident from the general employment of junction settlements with connecting railways. Making up statistics of traffic from the records of "freight received" instead of "freight forwarded," as here described, is a rational simplification. And the list of improvements is not by any means finished. Mr. Donaldson is now experimenting with a plan for having the forwarding agent make, for each shipment of freight, not only the way-bill, but also the three documents that will be needed at destination; the freight bill, the notice of arrival of the shipment to be sent to the consignee and the receipt to be signed by the consignee's drayman.

THE Commerce Court knows now how a man feels who has just escaped being lynched. Congress seemed determined to abolish it, and passed a bill for this purpose, but the President vetoed it, and it was impossible to get the two-thirds majority necessary to pass it over his head. The court has been the victim of conditions it had little or nothing to do with creating. There had been for some time a good deal of agitation against courts in general, on the ground that they were influenced too much in their decisions by consideration of the rights of property and too little by consideration of the rights of man. In the midst of this, the Commerce Court rendered a few decisions reversing decisions that had been made by the Interstate Commerce Commission. The commission, as always jealous of its authority, began attacks on it at just the psychological moment when many politicians saw that they might enhance their popularity by joining in them. While several decisions of the court were much resented by the commission, the only one that seems to have been much resented by anyone else was that in the intermountain rate cases. While the railways did almost nothing to save the court, some prominent shippers' organizations came to its defense and asked that it should not only be preserved, but that its powers should be increased. Nevertheless, caught as it was in a position where both the commission and the politicians conceived that they might gain by its destruction, it had a very narrow escape with its life. It is an interesting question what effect on its future decisions this almost fatal attack will have. Undoubtedly its members will try to keep the incident from influencing them at all. But if its rulings are less favorable to the railways hereafter than heretofore it will be believed that the judges have been scared into changing their attitude, and if they are as favorable to the railways in the future as in the past, no doubt the attacks will be renewed. If the court is fair it is almost bound to render more decisions in proportion in favor of the railways than does the Interstate Commerce Commission, because, naturally, the relatively few cases the roads appeal are their strongest ones. However, the extent and nature of the Commerce Court's powers and functions will be settled by decisions of the Supreme Court

in a short time, and if the question of abolishing it comes up again it probably will not arise in a presidential year, when everybody in Washington is playing the great American game of politics. It will not be surprising, therefore, if the temporary victory won by the friends of the court shall prove to be permanent, and it shall have a long life of usefulness.

THE question of Panama canal tolls and of what restrictions should be imposed on the use of the canal by vessels controlled by railways were settled as most questions are settled by Congress in a presidential year—that is, in the way that it was thought would be best for the politicians, and practically regardless of the results for the country. The reports of the experts and the Congressional committees that had investigated the subject were ignored; the provisions of the Hay-Pauncefote treaty probably were violated; and a measure was passed which will allow vessels engaged in the coastwise trade to use the canal free of tolls and which will prohibit its use altogether by vessels controlled by American railways. The charge is made by foreign governments that the provision for free tolls for American vessels is a discrimination against foreign vessels in violation of the Hay-Pauncefote treaty. The provision prohibiting the canal's use by vessels owned by American railways is a discrimination of exactly the opposite kind—in other words, in favor of foreign, and against American railways. Under the legislation a steamship owned, for example, by the New York, New Haven & Hartford or the Southern Pacific, which are United States railways, cannot pass through the canal at all, while steamships owned by the Canadian Pacific or the Grand Trunk, which are Canadian railways, can use it. While vessels of the Canadian railways may not legally engage in our coastwise trade, goods may be shipped from New York to Montreal by rail, taken from there in vessels owned by Canadian railways around to Vancouver and shipped thence by rail down to Seattle. There does not seem to be anything to prevent the ships owned by Canadian railways from thus actually, although not technically, engaging in our coastwise trade via the canal. In a recent speech in the Senate, Senator Lodge of Massachusetts said: "I cannot understand that attitude of mind which is perfectly ready to let the canal remain open, as it must remain open, to railway-owned ships from other countries, and yet prevent any of our railways from owning a share in any vessel which passes through it. * * * I cannot understand this readiness on the part of Congress and of political parties in this country to strike continually at our own business. I recognize as fully as anybody the errors and mistakes of the railways, the injustices they have committed and the wrongs they have done, and I believe as thoroughly as anybody in a strong government control, supervision and regulation, but that is a very different thing from making war upon them as if they were a nest of criminals fit only to be destroyed." Neither the free toll provision nor that barring railway-owned vessels from the canal will hurt most of the railways seriously. It is the general attitude which such legislation illustrates that is causing trouble—the tendency, as Senator Lodge says, to make war on the railways as if they were a nest of criminals, and to pass almost every measure anyone proposes which it is thought may directly or indirectly injure them on the theory that whatever may injure them must benefit the public. The unintelligent and inconsistent way that a large part of the regulation of corporations, and especially of railways, is being done, is enough to shake one's belief in any public regulation of business at all. The principle of public regulation, assuming that it will be wise and fair, is right; but it is so often neither wise nor fair that it is a serious question whether, in the large, it does more good or evil.

IMPROVED LOCOMOTIVE EFFICIENCY.

THE improvement in locomotive economy which has been brought about on new power that have been introduced into service on many roads within the past year or two is remarkable. While the locomotives have grown considerably in size, as far as weight and capacity are concerned, this has been brought about without a corresponding increase in the tax upon the energy of the engineer and fireman. With a few notable exceptions, the arrangement of the apparatus in the cab of the large modern locomotives is very different from what it was on those which were standard a few years ago. These changes have all been in the direction of convenience, and safety to the engine crew, and ease of operation. For instance, the water gage glasses and the feed glasses on the lubricators are not only designed to indicate conditions much more clearly, but are safeguarded so that there is no possibility of their bursting, or in such a way that the engine crew cannot be injured by flying glass. The various gages are so arranged and artificially lighted that the men can read them easily. The valves, levers, etc., are placed so that they may be reached and operated with a minimum of effort. On the more powerful locomotives the use of the power reverse gear is becoming quite common.

Conditions have also been made more convenient for the firemen. The rapidly increasing use of the superheater and brick arch has greatly reduced the amount of fuel to be handled per unit of work. The committee on Superheated Steam and Boiler Maintenance, which reported at the Master Boiler Makers' Association last May, estimated that the saving of fuel due to the installation of the superheater averaged from 10 to 25 per cent., depending upon the conditions. The report of the committee on the Relation of Mechanical Appliances to Fuel Saving, which was read before the Traveling Engineers' Association this week, indicates that savings as high as 26 per cent. are possible with the superheater. Tests on the Lake Shore & Michigan Southern have shown that the fuel saving due to the use of the superheater on switching locomotives amounts to 40 per cent. The committee on the Advantages and Disadvantages of the Use of Arches and Arch Pipes, which reported at the Master Boiler Makers' convention, showed that a saving of 11.9 per cent. might be considered a fair figure for the average conditions under which the arch is used. The committee of the Traveling Engineers' Association, above mentioned, reports that a fuel saving of from 5 to 15 per cent. can be expected from the brick arch.

Another exceedingly important factor in the improved efficiency of locomotives is that more and more attention is being given to designing them to suit the special conditions for which they are to be used. The mechanical stokers on some of the very large locomotives that have been introduced within the past year or two, and the oil-burning locomotives used in many parts of the country, greatly reduce the physical demands on the firemen. Other mechanical devices that have been introduced more or less extensively on recently constructed power, and which all help to make the work of the firemen lighter, are mechanically operated fire doors, grate shakers, coal passers, etc.

A few instances of modern locomotives that have been so designed as to effect important economies may not be amiss. The new Pacific type locomotives which have been introduced on the Vandalia for hauling fast passenger trains between Terre Haute, Ind., and Indianapolis, pull 100 tons more than the previous lot of Pacifics, and at the same time use 9 per cent. less coal and 17 per cent. less water. Tests which were made on a new lot of Pacific type locomotives on the Illinois Central last spring showed that they required 12½ lbs. of coal and 74½ lbs. of water per 100 ton miles, while the previous design of Pacifics required 15 lbs. of coal and 92 lbs. of water for the same service. The Mikados which replaced the consolidations in freight service on the Chicago & Alton haul trains 25 per cent. heavier and show a fuel saving of 28 per cent. per unit of work.

AUTOMATIC TRAIN CONTROL.

THE time has come when it behooves railway managers to give serious consideration to the subject of automatic train control. That this is fully realized by some of the managements is illustrated by the fact that the Chicago & Eastern Illinois has decided to install a train control system on 107 miles of its line from Villa Grove, Ill., to Salem, and on all locomotives operating on that part of its road.

It is shown conclusively by statistics, and repeatedly has been pointed out in these columns, that a great majority of railway accidents is due to failures of the human element, to the tendency of employees to take risks, and the failure of operating officers to adopt and enforce measures necessary to restrain the tendency. No kind or number of automatic devices will prevent most of the accidents that now happen to passengers and employees; nor can the 5,000 trespassers who are killed every year be saved by any kind of automatic train control; the only way to save them is for the public authorities to make them keep off railway property.

Nevertheless, it is true that there are many collisions and some derailments which, in theory, could be prevented by automatic train control. These accidents are numerically a small part of the total. But their relative importance is greater than their relative number. One reason for this is the peculiar relation which exists between passenger and carrier, and which requires greater care and diligence on the part of the carrier than the relation that it bears to any other class of persons. Another reason is the widespread publicity given to collisions, resulting in fatalities to passengers, which makes them, from the railway's own special standpoint, the most undesirable things that can happen. The statistics given in an editorial in the *Railway Age Gazette* of August 2, 1912, page 189, show that the efforts the railways have been making to reduce collisions have been bearing fruit. The number of them, both rear and butting, has been substantially declining, not only in proportion to the traffic handled, but also absolutely. But many collisions do continue to occur; and it is contended by the advocates and promoters of automatic train control, who are getting a wide hearing in the press, that the railway managements are responsible for this. The enthusiastic promoter says that by mechanical or electrical devices collisions can be rendered practically impossible; that the railway managements know this, but will not adopt these devices, either because they are wilfully ignorant regarding them or because they do not want to incur the necessary expense; and the only way to remedy the situation is by legislation requiring the universal installation of automatic stop devices.

These arguments receive, directly or indirectly, more or less support from high governmental authority. The Interstate Commerce Commission's Block Signal and Train Control Board, which investigated the subject for some years, reported that "in many situations the use of automatic train stops is necessary to the safe operation of trains," that "there are several types of apparatus and methods of application which if put in use would quickly develop the degree of efficiency adequate to meet all reasonable demands"; and "that the railways should be urged to develop the art of automatic train control; . . . and, should it not be done with a reasonable degree of expedition, steps should be taken by the government to stimulate such action." Furthermore, Mr. Belnap, chief inspector of safety appliances of the commission, is urging the need for automatic train control in practically every report he makes regarding a collision. However illogical and unscientific his reports may sometimes be, they are getting a wide circulation and will influence the public.

The duty to others and to the railways that this situation imposes on railway managers seems clear. Either it is true, or it is not true, that automatic train control has a useful function, and that the means for it exist or may be developed; and the duty that the situation clearly imposes on the managers is to act on the recommendations of impartial investigators of the subject and who contend that automatic train control is practicable and desirable, or else to meet those contentions squarely and set forth definitely the conditions which make automatic train control undesirable, or impracticable, or both.

Railway men have claimed (a) that no train control device has proved itself practicable, and (b) that even if a practicable device existed it is doubtful if its use would be desirable. In answer to the first objection the promoters of the automatic stop point to the record of tests conducted by the Block Signal and Train Control Board. Two or three of them have for their devices a modified approval of the board, and all have its statement, already quoted, that automatic train control appears to be entirely practicable. Attention is also called to the fact that automatic stops are in successful service on the Pennsylvania, the Hudson & Manhattan, and the Interborough subway lines in New York City, and on the lines of the Washington Water Power Company and the San Francisco, Oakland & San Jose in the West. It is true the conditions on these electric lines are radically different from those ordinarily found on steam lines, but it is contended that the difficulties peculiar to steam operation can be overcome.

Railway men also urge the probable effect of automatic stops on discipline, claiming that their use would cause enginemen to relax their vigilance. The experiences of the electric roads which are now using automatic stops would seem to indicate the opposite. During the month of June, 1912, on the Interborough subway lines in New York City, where the automatic stop is used, three motormen overran stop signals, while on the elevated lines, where the automatic stop is not used, 13 cases of disobedience of signals were reported. The Washington Water Power Company's lines have had a similar experience. The certainty of detection in case a signal which has an automatic stop operating in connection with it is overrun exerts a strong influence in securing obedience to the signal.

It is also urged by railway men that the proper maintenance of automatic stops will introduce new difficulties. This is a grave question, to be settled only by extended service tests. To match, on 1,000—or 100—miles of outdoor railway the high-pitched, refined inspection that is given to the signal apparatus on the few miles of the New York subways is a problem to test the resources of the most progressive railway.

But, as a matter of fact, the only way to find out whether or not automatic train control devices are generally practicable and desirable is to try them out thoroughly under the rigid and varied conditions of service. The fact that collisions continue to occur, that automatic stops for electric service have been proved successful, and that such devices for steam service have not yet been proved impracticable and undesirable, but that the experiments with some have been in a degree satisfactory, is rapidly raising the presumption that automatic train control on steam roads is both practicable and desirable. If the railways are not convinced by the investigations and reports of the Block Signal and Train Control Board, why do they not supplement its work through some agency of their own, instead of sitting back and doing almost nothing, while a public opinion to the effect that railway men are either ignorant and prejudiced, or do not care enough about public safety, is being created?

While the *Railway Age Gazette* is not prepared to advocate automatic stops, and is opposed to legislation regarding them, it does urge the early commencement of a thorough, open-minded investigation by the railways themselves as here outlined. The decision of the management of the Chicago & Eastern Illinois to test one device merits hearty commendation. The American Railway Association, through some appropriate body designated by it, or some other organization of railway men, should either take hold and develop the art, or show the reasons for not doing it. Perhaps the investigations should be paid for by all the railways, since all of them will be benefited.

They should be directed to discovering whether it is possible to get two trains together, rather than to seeing if two trains can be kept apart.

The tendency of the press, public authorities and railway employees and their spokesmen to give exaggerated prominence and importance to the matter of automatic devices is to be deprecated. All of this superficial agitation without study of the knotty features of the problem is worse than wasted. As the Block Signal and Train Control Board said in the same report in which it urged the railways to develop automatic train control, "It must not be assumed that the use of automatic devices of any kind will remedy all the faults at present existing in train operation. Such devices can do no more than reduce the percentage of accidents that occur through failure, from any cause, to observe the prescribed conditions of safety. The automatic stop is purely an emergency device, like the fire extinguisher. We do not depend on fire extinguishers to prevent fires, but when, in spite of our elaborate precautions, a blaze nevertheless starts, the presence of a fire extinguisher near at hand is often the means of forestalling disastrous conflagration. So with such devices as the automatic stop. They cannot insure that the fundamental conditions of safety on railways will be observed, but when the necessary precautions for the prevention of certain classes of train accidents are ignored, they may intervene to forestall the accident which might otherwise happen. But when all is said that can be said in favor of the use of automatic safety devices, it still remains true that they correct none of the fundamental defects in American railway practice. Bad methods of operation and management, inefficient supervision and inspection, poor discipline, and lack of co-operation between the different branches of the personnel, deficient structures, roadway and equipment, all of which introduce fundamentally dangerous conditions, still exist, and cannot be remedied by the use of automatic appliances."

LEHIGH VALLEY.

HAVING built its property up largely through earnings and with very conservative financing, and having put the physical plant in excellent shape, the Lehigh Valley was ready in the last fiscal year to make an adjustment with its stockholders covering accumulated profits, and an adjustment with its subsidiary coal company, placing the affairs of the Railroad company on a basis of greater certainty to outsiders. The adjustment with the stockholders took the form of an extra dividend of 10 per cent. While there was not the slightest concealment of the gradual accumulation of profit and of the fact that at some time in the not distant future stockholders would receive earnings from earnings which had heretofore been put back into the property, the fact that the adjustment was made tends to make the Lehigh Valley stock a more stable investment, and to take away from it something of its speculative character.

The adjustment with the Lehigh Valley Coal Company, which had been controlled by the Railroad company, was brought about by the formation of the Lehigh Valley Coal Sales Company. Stockholders of the Lehigh Valley Railroad Company were offered the privilege of subscribing to the entire outstanding stock of the Sales company, and now neither the Railroad company nor its controlled Lehigh Valley Coal Company has any ownership in the stock of the Sales company; and since this Sales company buys all of the coal at the mine's mouth, it would seem that the Railroad company has adjusted its affairs in such a way as to meet not only the commodity clause as interpreted by the Supreme Court, but also a commodity clause which might be passed in conformity with the recommendations of the majority of the Stanley steel committee.

The Lehigh Valley did no financing during the year. The principal receipts of cash were $6,470,000 net income; cash returned to it by subsidiary companies, and $3,040,000 paid in for past indebtedness by the Lehigh Valley Coal Company and other receipts from various sources, which, including a reduction in cash on hand of $4,800,000, gave the company roughly about $20,000,000, to spend during the year after the payment of expenses and interest charges. Of this $20,000,000, $12,130,000 was paid out in dividends and $3,530,000 was paid for additions and betterments, and $1,900,000 toward reduction of outstanding securities. At the end of the year the company had on hand $15,800,000 cash, with $16,800,000 securities issued or assumed and held in the treasury, with but $4,250,000 working liabilities. This is more than an ample working capital for a road doing the business that is done by the Lehigh Valley.

In 1912 total operating revenues amounted to $36,910,000, a decrease of $780,000 from the previous year, due entirely to a decrease in coal freight traffic during the months of May and April. It will be recalled that during these two months the anthracite mine workers were idle, pending a readjustment of the wage scale, and during these two months coal almost ceased to move. Merchandise freight revenue, which amounted in 1912 to $14,590,000, was almost exactly the same as in 1911; while passenger revenue amounted to $4,700,000, or a little over $100,000 more than in 1911.

Operating expenses in 1912 amounted to $24,720,000, an increase of $1,300,000; this increase being quite evenly divided between maintenance and transportation expenses, the operating ratio in 1912 being 66.98, and in 1911, 62.11. Of course, during the two months that the road ceased to earn revenue from coal traffic it was impossible to cut down expenses anywhere nearly in proportion to the falling off in business. After the payment of expenses and taxes, there was an operating income of $10,440,000 in 1912, as compared with $12,810,000 in 1911. President Thomas, in his report, calls attention to the fact that taxes have further increased by over $300,000 during the year, and now consume 3.93 per cent. of the company's revenues.

The Lehigh Valley is a double-track road from New York through the anthracite coal fields to Buffalo and Niagara Falls. It carried a total tonnage in 1912 of 28,010,000 tons, with an average haul of 171 miles, making the freight density 3,320,000 tons (number of tons carried one mile per mile of road). This is a very heavy business for a two-track line, especially when a road has in addition a passenger density of 180,000 per mile. Of the total tonnage carried, 15,170,000 tons was coal and coke, which is less by 2.71 per cent. than in 1911. The company carried 2,400,000 tons of L. C L. freight and 1,600,000 tons of cement, brick and lime. Grain furnished 1,030,000 tons.

Although large expenditures for upkeep are not always reflected in increased operating efficiency, seldom, if ever, is increased operating efficiency shown when the physical property is being let run down. The fact that $340,000 more was spent in 1912 for maintenance of way and structures than in 1911, and $310,000 more for maintenance of equipment than in 1911, would be in itself a pretty good indication that there had been no attempt to cut the cost of upkeep to offset the two months that coal traffic ceased to move. Statistics for operation tend to bear out this assumption. With a decrease of 2 per cent. in ton mileage, there is a decrease of 5.83 per cent. in freight train mileage and a decrease of 6.03 per cent. in empty freight car mileage, and an increase of 3.38 per cent. in the average number of loaded freight cars in train. There was a decrease of 9.70 per cent. in the miles run by yard switching engines; but, on the other hand, there was an increase of 7.96 per cent. in the miles run by engines in helping service. In 1912 the mileage of yard switching engines totaled 4,850,000, and of helping engines, 1,090,000.

While the great proportion of the freight tonnage carried by the Lehigh Valley is low grade and permits of heavy loading, the quite heavy passenger density and the rather heavy grades of the line militate against heavy train loading. Notwithstanding the adverse features, the Lehigh Valley had an average revenue trainload of 566 tons in 1912, which is an increase of 23 tons, or 4 per cent., over 1911. Moreover, this increase in trainloading was accomplished despite the fact that the falling off in ton

mileage of coal and coke was much greater than in miscellaneous freight.

During the year the company spent $3,870,000 for additions and betterments, of which $850,000 was for passenger train cars. Of the total spent for additions and betterments, $340,000 was charged to income as against $980,000 charged to income for additions and betterments in 1911.

Some of the more important or interesting improvements that the company has made during the past year are the building of a modern car dumping plant of 1,500,000 tons annual capacity at Perth Amboy; the building of a concrete grain storage elevator of 446,000 bus. capacity at New York harbor; and the continuation of the installation of telephone train despatching which, with the work done this year, makes the line between Manchester and Buffalo almost completely worked by telephone despatching. In this connection it is interesting to notice that during the past year 397 portable telephone sets were installed in passenger and freight trains. The Lehigh Valley has installed upper-quadrant three-position automatic signals between Gum Run and Laurel Junction, and on the four-track extension from Cementon to Treichlers; the disc signals on old first and second track being replaced. On all its four-track road the Lehigh Valley now has automatic upper-quadrant signals; and on the automatic signals between Park View and Port Reading Junction the oil lights have been replaced with acetylene lights. The company has bought during the past year 26 gasolene motor cars for section and bridge gangs.

The following table shows the principal figures for operation in 1912 as compared with 1911:

	1912.	1911.
Average mileage operated	1,441	1,432
Total freight revenue	$16,301,316	$17,155,534
Merchandise freight revenue	14,591,240	14,687,291
Passenger revenue	4,703,734	4,568,030
Total operating revenues	36,905,935	37,687,403
Maint. of way and structures	3,963,589	3,620,176
Maint. of equipment	6,313,317	6,003,287
Traffic	980,117	1,010,675
Transportation	12,606,962	11,979,278
Total operating expenses	24,720,250	23,407,310
Taxes	1,451,311	1,145,477
Operating income	10,443,135	12,814,438
Gross corporate income	12,559,596	14,490,176
Net corporate income	5,746,576	5,990,169
Additions and betterments	340,944	980,549
Dividends	12,126,915	*6,060,800

*This is not the same amount of dividends as shown in our comments on the report for 1911 because the company has changed its methods of charging dividends and now charges the dividends which are paid July 14 but declared before the end of the fiscal year to that fiscal year in which they are declared. We have, therefore, in the accompanying table changed both 1911 and 1912 to this basis, subtracting the dividends that were declared in 1910 but paid in 1911.

NEW BOOKS.

Electrical Blue Book. Edition of 1912. 9 in. x 12 in.; 206 pages. Compiled and published by the Electrical Review Publishing Company, Chicago. Price, $2.00.

The first section of this book is devoted to electrical construction material, approved by the National Board of Fire Underwriters. All the supplies of this nature are illustrated and described, the names of the makers are given and the dates when the articles were approved. The second section treats of representative lines of other electrical supplies that the users of this book have occasion to buy. The supplies in this section are treated in the same manner as those in the first section. The last section of the book gives the 1911 National Electric Code, the rules and requirements of the National Board of Fire Underwriters for electrical wiring and apparatus as recommended by the National Fire Protection Association. This code is supplemented by illustrations so that the rules will be more readily understood. These rules are indexed under their subjects. The book is designed to enable buyers to obtain a clear and intelligent view of the entire electrical supply market and constitutes a valuable source of information on electrical material.

Letters to the Editor.

RECOOPERING OF GRAIN CARS AT CHICAGO.

Chicago, August 21, 1912.

To the Editor of the Railway Age Gazette:

The twenty-three grain-carrying lines entering Chicago have executed a contract with the J. A. McNulty and A. E. Schuyler Agency to reclaim all grain doors from in-bound cars and to re-cooper all cars for out-bound shipments. Because of the volume of business, the contract was made on favorable terms, and insures to all carriers the return of the grain doors from in-bound cars and the standard cooperage of all out-bound cars.

With a view to reducing the leakage of out-bound grain to the minimum, cars are re-coopered in accordance with the following instructions:

1. All cars to be coopered are inspected to see if they are suitable for carrying bulk grain.
2. Each car is swept clean.
3. Fiber paper and burlap are used freely to make cars grain tight, as follows: (a) Defective linings are repaired with fiber paper, burlap and boards. (b) Wherever necessary the linings at the ends of cars are covered with fiber paper. This paper is so applied that it will overlap the floor several inches. Defective side linings covered are covered similarly. (c) King bolts are covered with burlap. (d) Paper or burlap pads are used to cover any cracks in the floors. (e) Door posts filled with old nails or spikes are covered with burlap or paper pads to insure tight joints between grain doors and door posts. (f) Where necessary to prevent possible leakage between the boards of grain doors, fiber paper is applied on the inside of the door. This paper is so applied that it will overlap the floor several inches.
4. To stiffen the grain doors and to prevent possible leakage at their intersections, the doors are tied together near the center with an upright brace extending from the door-sill. Wherever possible the upright brace is secured at the floor by means of a well-nailed cleat placed about ¾ of an inch from the brace.
5. Any loose sheathings are secured to the sills by the free use of cement-coated nails.

The weighing department of the Chicago Board of Trade is co-operating with the re-cooperage agency in every way to prevent the loss of grain, and the Board of Trade weighmaster's inspector gives his O. K. to the car conditions on a self-addressed card 5½ in. x 9 in. in size, which is attached to the inside grain door of each car coopered. The wording of the card is as follows:

"THIS ..... CAR No. ..... SHOULD NOT LEAK, AS IT WAS CAREFULY COOPERED.

"At the time of loading, the car and the cooperage were inspected and their condition was approved by the weighing department of the Chicago Board of Trade.

"In case leakage is shown, the parties unloading will please note on this card on space provided below, the cause of the leakage, the location on the car of the leak-defect, and as nearly as he can judge by close interior and exterior inspection, the extent of the leakage which resulted from such defect, mailing this self-addressed card to the GRAIN DOOR BUREAU, 1143 TRANSPORTATION BUILDING, CHICAGO, ILLINOIS.

"Coopered by .....

"Cooperage and car inspected by.....

"Deputy Weighmaster.

"Note: The information called for above, IF RELIABLY GIVEN, will prove of special benefit in eliminating causes of leakage."

On the opposite side of the self-addressed postal-card is printed:

"Grain Door Bureau,
"1143 Transportation Bldg.,
"Chicago, Illinois."

As the Chicago Board of Trade weighing department has a natural reputation for accuracy, and the cooperage of cars is under its supervision, insuring the best possible car cooperage, the railways making the delivery of Chicago loaded grain destined to the East, Southeast, or South, will without doubt re-

quire an accurate record of the weights at destination and the manner of securing the weights before paying claims for alleged shortage.

W. A. GARRETT,
Chairman, General Managers' Association of Chicago.

DEMURRAGE FROM BOTH RAILWAY AND SHIPPER'S POINT OF VIEW.

BALTIMORE, Md., July 29, 1912.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

Recent contributions in your valuable paper on the subject of demurrage have been read with much interest. All, or nearly all, show bitterness.

Manifestly it would be impossible for the carriers to provide and keep waiting sufficient equipment to place it without delay at the call of every shipper, if consignees and shippers are to be permitted to use their own sweet will in loading and unloading. Suppose it possible for the carriers to stand the burden of providing such an abundance of cars, would it then be possible for them to be handled by the roads to the satisfaction of the patrons or the profit of the carriers? It is, I think, conceded that the carriers do pretty well when the supply of cars that they furnish is sufficient, when handled with reasonable despatch, under fairly normal conditions, to accommodate all without causing undue inconvenience or hardship.

It is obvious that there must be demurrage rules; and they should be recognized by the public and justly and impartially administered by the carriers. It is also apparent that the rules are jointly for the benefit of the public and the protection of the carriers' enormous investment in cars. During most of the time a car is delayed the carrier would much prefer to have the use of it than to collect the dollar a day; and during most of the time that some fellow is delaying a car, at a cost to himself of a dollar a day, hundreds of others would willingly pay a premium to get that car. Such things as premiums to get cars have been heard of in the past.

The rules as they exist are doubtless still defective, but they are the best we have ever had and are probably more impartially administered than ever before. There is every reason to believe they will be still further improved and that eventually strict justice will be done to both the shippers and the carriers.

The carriers can do much if they will tabulate the causes of typical disputes and in this way learn if any one cause is responsible for most of the trouble in particular localities, while other localities are free from complaint on that score. By such a method they should be able to detect and correct many of the defects in both rules and administration. If they find one cause making trouble in practically all communities such a method should bring it to light, and afford the opportunity to at least make an honest effort to apply a remedy.

A reasonable public surely will refrain from indiscriminate and general complaint in and out of season. If a shipper comes across something which he feels is distinctly unjust, or for which the rules do not seem to provide adequately, let him bring it to the attention of the carrier or, if he prefers, the Interstate Commerce Commission, at the same time suggesting a remedy. It is important that the shipper attempt to suggest the remedy, for often in so doing he will become convinced he has no case, and probably find a way to overcome, himself, what he was about to lay on the shoulders of another. The commission could tabulate the complaints and suggestions it receives and for such of them as appear well founded endeavor to have the carriers provide a remedy.

There is a middle ground on which the shipper and carrier can meet, and as to the suggestion that the I. C. C. take over the whole matter, I very much doubt whether much of the shipping public have any idea, or even fancy, that they would be better off if the rules were taken over for ironclad administration by a department of the government; or that if such a course were pursued anything like a panacea would be provided for all the real and supposed car service troubles.

That there are real troubles no one familiar with the subject will deny; on the other hand it is a safe assertion that much of the difficulty experienced is due to lack of knowledge of and compliance with the provisions of the rules.

I have in mind large corporations whose attitude on this subject was that demurrage was simply another device of the carriers to extract additional revenue from them, and on this basis they usually considered it proper to refuse to pay the bills, whether right or wrong. Of course this could only produce toward them an attitude of suspicion and distrust by every clerk and officer of the carrier. Such a situation could not be for the best interest of either party. It was bound to and did gradually permeate the other business transactions of both until there had to be settled by officers a great many matters of a routine nature which principals should not have been bothered with.

Of course, such a state of affairs culminated in a day of reckoning, executives took a hand, a better understanding was reached, instructions were reached, instructions were issued that subordinates were to familiarize themselves with and obey the rules, and thereafter not nearly so much demurrage accrued. One by one the real causes for complaint were run down and many of them ironed out, and now a vexing and annoying controversy on this subject seldom arises.

Many carriers have to their credit, or rather discredit, a not very enviable past in the handling of demurrage and they are under special obligation to adopt a policy of diplomatic conciliation, and to make every reasonable effort to explain the rules; also to get away from the old "cock sure" attitude of so many clerks and officers toward the fellow with a complaint or claim, that he has no case anyway, and what is he going to do about it. No carrier can afford to take such a position, least of all a carrier with a clouded past, when favored ones got off almost or entirely free, while the other fellow had to pay.

Let the carriers see that employees who cannot be trusted to handle such matters in a broad way are relegated to more obsecure duties, better suited to their temperament. All concerned should approach this question with one idea of doing justice. if everyone will concede a little, the problems will be solved and new difficulties overcome as they arise.

H. HARLEM BAKER.

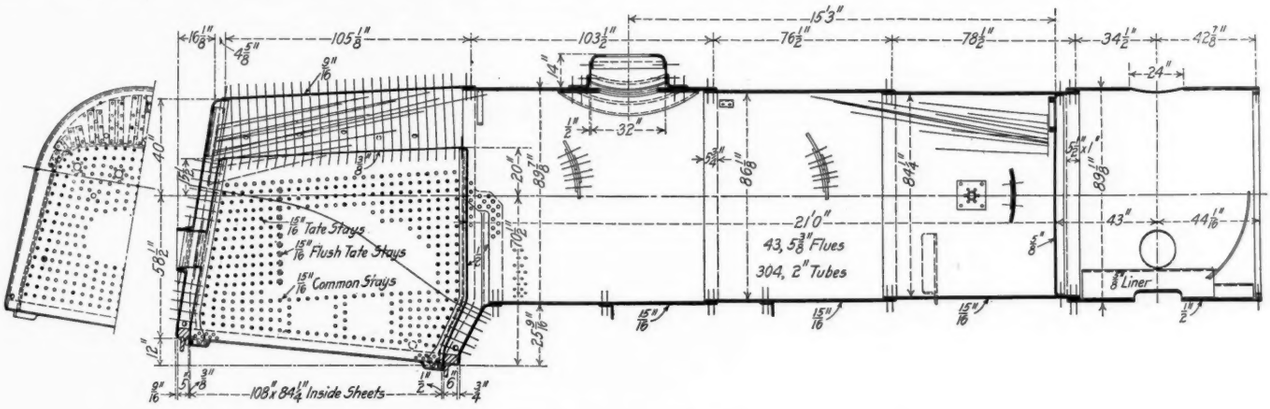
ARGENTINE RAILWAY STATISTICS.—In the year completed on June 30, 1912, the railways in Argentina suffered through strikes in the same way as lines in Great Britain. In a comparison of the results of the year with those for 1910-11, it must not be overlooked that the mileage of the lines has grown in many cases, so that even where active receipts are higher the density of the traffic is lower and less profitable. The biggest drop in receipts is 8.8 per cent. on the Buenos Aires Western, where the mileage is up 4.6 per cent. This is due to the poor wheat crop. Last year the company brought down its ratio of operating expenses from 56.52 to 52.86 per cent., so that even if it has kept the ratio of operating expenses down to the lower figure, its net revenue will be more than $500,000 lower, equal to about 1 per cent. on the ordinary stock. The company has issued $10,000,000 of new 4 per cent. capital since last year, so that the reduction in the dividend cannot very well be less than 1 per cent. The Great Southern has increased its receipts by 7.6 per cent. and its mileage by 8.4 per cent. Last October the company issued $15,000,000 in 4 per cent. shares, but owing to its habit of charging interest during the construction to capital it is not possible to say whether any of this charge will be met from revenue. Also last year only $134,500 interest on the $12,000,000 4 per cent. 1912 shares was charged to revenue. The increase in net revenue, however, will be sufficient to cover these charges and permit the 7 per cent. dividend, less tax. The Central Argentine also shows a big drop in receipts, due to the corn traffic having fallen off in comparison with the very large traffic last year. —*London Economist.*

POWERFUL MIKADOS FOR THE LACKAWANNA.

Designed to Handle Heavier Freight Trains, in Both Fast and Slow Service, between Buffalo, N. Y., and Elmira.

In our issue of July 19, 1912, page 88, we described seven new Pacific type locomotives recently introduced on the Delaware, Lackawanna & Western for hauling heavy passenger trains over the grades between New York and Elmira without double heading, as was necessary with the ten-wheelers which they superceded. Fifteen Mikado locomotives have just been delivered to the same road by the American Locomotive Company for use in hauling heavier freight trains in both fast and slow service, driving wheels and a tractive effort of 29,480 lbs. are being used.

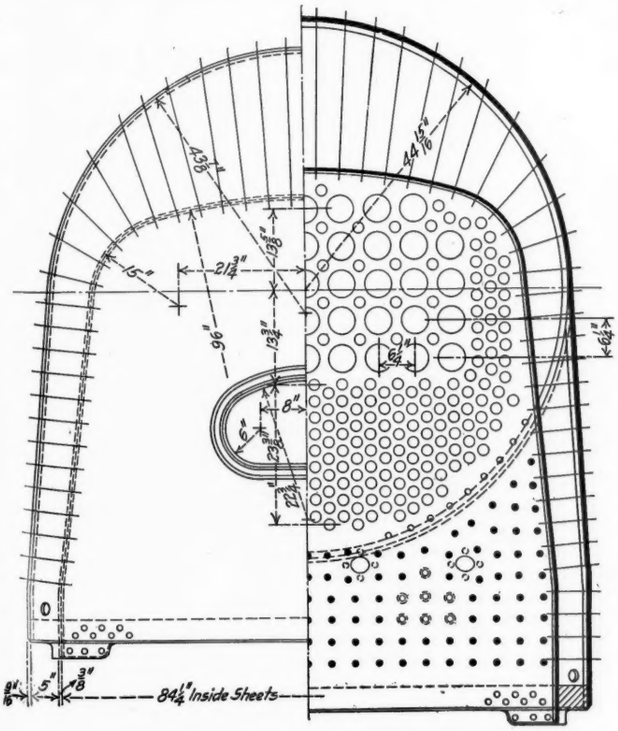
The boiler is equipped with a Schmidt superheater of the top-header double loop type providing 1,085 sq. ft. of superheating surface, the largest ever used in a simple non-articulated locomotive. At the same time, by the use of 2-in. tubes, 21 ft. long, the large evaporating heating surface of 4,854 sq. ft. has been provided. The firebox is equipped with a Security

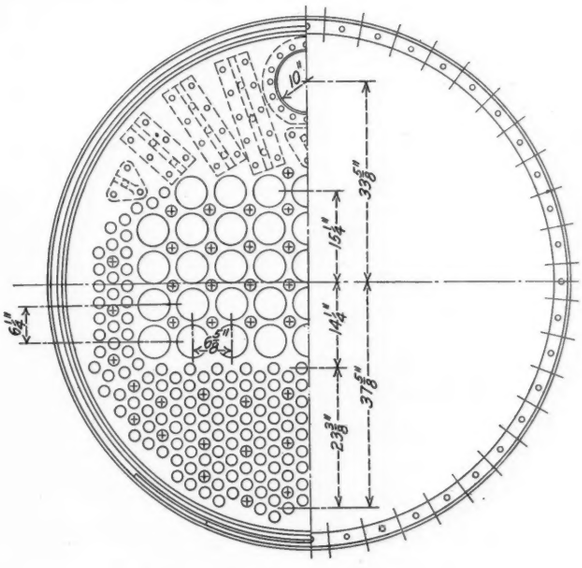


Boiler of Mikado Locomotives; Delaware, Lackawanna & Western.

between Buffalo, N. Y., and Elmira, thereby reducing the operating cost of handling this traffic. The Mikados have 28 in. x 30 in. cylinders, 63 in. drivers and a tractive effort of 57,000 lbs. The slow freight service is now being handled by consolidation locomotives with 26 in. x 30 in. cylinders, 57 in. driving wheels and a tractive effort of 51,400 lbs., while in fast freight service consolidation engines with 20½ in. x 26 in. cylinders, 57 in. brick arch. The ash pan is of the six-hopper design similar to the style applied to the Mountain and Mikado type locomotives constructed by the same builders for the Chesapeake & Ohio, as described in the *Railway Age Gazette* of September 22, 1911, page 556.

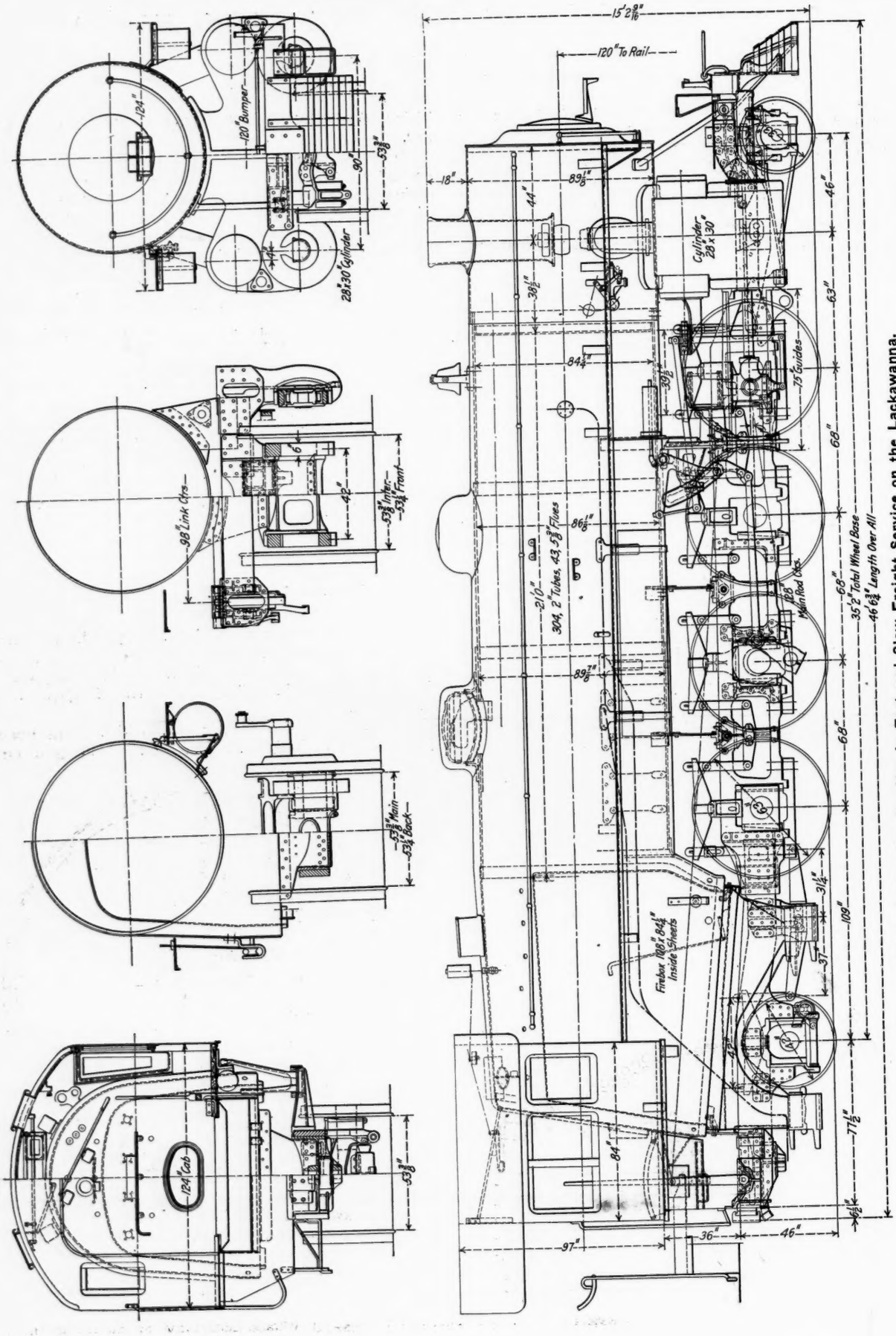
The boiler construction presents no novelties. Tate flexible staybolts have been freely used. The dome is built up of three





304, 2" Tubes. 43, 5 3/8" Flues.
Tubes Beaded Over Marked Thus +

Showing the Arrangement of the Firebox Sheets and Boiler and Superheater Tubes on Mikado Locomotive for the Lackawanna.



Mikado Locomotive for Use in Fast and Slow Freight Service on the Lackawanna.

parts, there being a ½-in. sheet ring connecting the two flanged 1 in. sections. The smoke stack has a very long interior extension, bringing its lower edge but one foot above the top of the exhaust nozzle.

In the construction of the running gear the latest approved practices of the builders have been followed in many particulars. It will be noticed that the same type of long main driving box which was used on the Pacific type above mentioned, and was illustrated and described in detail in the July 19, 1912, issue of the *Railway Age Gazette*, page 88, has also been applied to these locomotives. It is said that this type of driving box is meeting with general approval, and that it has now been adopted for 82 locomotives, either built or under construction. The self-centering guide for the extended piston rod and the self-centering arrangement for the valve stem guide, have been applied to the Mikado as well as the Pacific type. The piston valve is 16 in. diameter and has a 7-in. travel, the steam entering through the outside pipe at the top of the steam chest. It will be noted that the ordinary type of reverse lever is used and that the reach rod is placed very low, connecting to a downwardly extending arm on the lift shaft.

The general dimensions, weights and ratios are shown in the following table:

General Data.

Gage	4 ft. 8½ in.
Service	Freight
Fuel	Bit. coal
Tractive effort	57,000 lbs.
Weight in working order	312,000 lbs.
Weight on drivers	236,500 lbs.
Weight of engine and tender in working order	471,700 lbs.
Wheel base, driving	17 ft.
Wheel base, total	35 ft. 5 in.
Wheel base, engine and tender	67 ft. 7 in.

Ratios.

Weight on drivers ÷ tractive effort	4.15
Total weight ÷ tractive effort	5.47
Tractive effort × diam. drivers ÷ equiv. heating surface*	556.60
Total equiv. heating surface* ÷ grate area	102.40
Firebox heating surface ÷ total equiv. heating surface*, per cent.	5.40
Weight on drivers ÷ total equiv. heating surface*	36.60
Total weight ÷ total equiv. heating surface*	48.50
Volume of both cylinders, cu. ft.	21.40
Total equiv. heating surface* ÷ vol. cylinders	301.40
Grate area ÷ vol. cylinders	2.94

Cylinders.

Kind	Simple
Diameter and stroke	28 in. x 30 in.

Valves.

Kind	Piston
Diameter	16 in.
Greatest travel	7 in.
Outside lap	1 3/16 in.
Inside clearance	0 in.
Lead	⅛ in.

Wheels.

Driving, diameter over tires	63 in.
Driving, thickness of tires	3¼ in.
Driving journals, main, diameter and length	11 in. x 21 in.
Driving journals, others, diameter and length	10½ in. x 13 in.
Engine truck wheels, diameter	33 in.
Engine truck journals	6 in. x 12 in.
Trailing truck wheels, diameter	42 in.
Trailing truck journals	9 in. x 14 in.

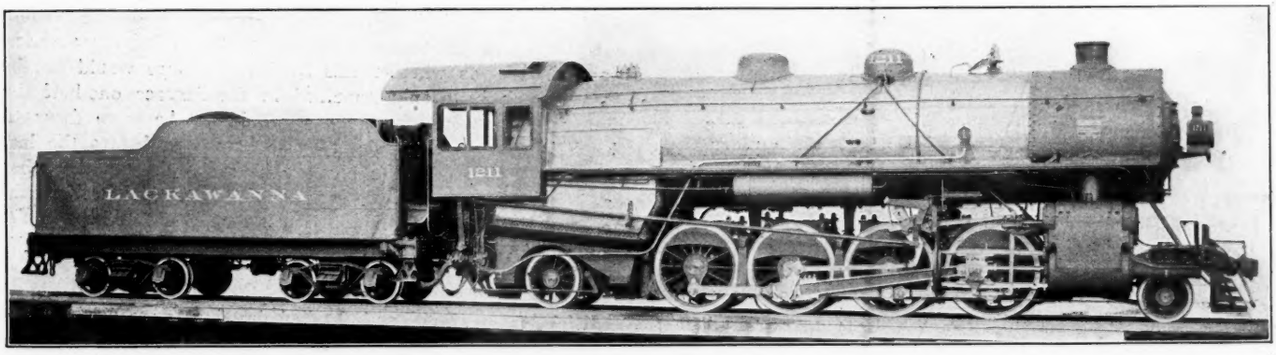
Boiler.

Style	Straight
Working pressure	180 lbs.
Outside diameter of first ring	88 in.
Firebox, length and width	103 in. x 84¼ in.
Firebox plates, thickness	⅜ in. and ½ in.
Firebox, water space	F.—6 in.; S. and B.—5 in.
Tubes, number and outside diameter	304—2 in.
Flues, number and outside diameter	45—5⅜ in.
Tubes, thickness and material	No. 11, B. W. G. Iron
Flues, thickness	No. 9, B. W. G.
Tubes, length	21 ft.
Heating surface, tubes and flues	4,592.8 sq. ft.
Heating surface, firebox	261.3 sq. ft.
Heating surface, total	4,859.1 sq. ft.
Superheater heating surface	1,065 sq. ft.
Grate area	63.1 sq. ft.
Smokestack, diameter	18 in.
Smokestack, height above rail	182 9/16 in.

Tender.

Frame	13 in. channel center and 10 in. chan. side sills
Wheels, diameter	33 in.
Journals, diameter and length	6 in. x 11 in.
Water capacity	8,000 gals.
Coal capacity	14 tons

*Equivalent heating surface equals 4,854.1 sq. ft. + (1.5 × 1,065 sq. ft.) = 6,451.6.



Mikado Locomotive Designed to Haul Heavier Freight Trains Between Buffalo and Elmira on the Lackawanna.

MASTER BLACKSMITHS' ASSOCIATION.

The twentieth annual convention of the International Railroad Master Blacksmiths' Association, which was held in Chicago last week, as noted in our issue of August 23, page 358, was quite successful. In addition to a number of papers by members addresses were made by H. T. Bentley, assistant superintendent of motive power and machinery of the Chicago & North Western; T. H. Curtis of the committee of investigation of smoke abatement and electrification of railway terminals in Chicago, and C. W. Cross, superintendent of apprentices of the western district of the New York Central Lines. Following is an abstract of the proceedings.

H. T. BENTLEY'S ADDRESS.

The blacksmith shop is one of the most important parts of a railway shop plant, for in most cases when material is held up in the smith shop it affects the output of various other departments. On a recent trip to England one of the things that impressed me most was a drop forge shop which had about 50 hammers. There was not anything, from a watch spring to an anchor, which they did not make under the drop forge, and the work was very satisfactory. After it was finished under the hammer there was nothing more to do to it. That is one thing we are careless about in this country; the tendency is for the blacksmith to leave a certain amount of stock on a forging for the machinist to take off. It should be understood that every one who is working for a railway is doing so for the purpose of helping pay dividends and keeping the public satisfied. The officers have the stockholders to please, and unless they can get returns for the money invested they cannot stay in business very long. Therefore it is for every man to try and reduce the cost of production, and it certainly seems to me

that there is a possibility of doing this by the extensive use of drop forgings.

Another thing I would like to speak of is the appearance of the shops. Keep them tidy; tidiness is something we ought to practice. Have a place for everything and put it in its place. When visitors or officers come into a shop they do not always have time to see how many forgings you are making, or just exactly the class of work you are doing, but if you have a clean shop they will go away with a favorable impression.

I have been told that your association is 20 years old today, and from appearances it seems that it has had a very healthy growth since it has been in existence. I believe that any convention that tends to help the men to get together and learn what the other fellow is doing, is something that should be supported by your superior officers.

PRESIDENT HOEFFLE'S ADDRESS.

The opportunity for the members of this association to take part in convention exercises such as these is a valuable educational experience. It enables each member to measure himself by coming in contact with others. We are not here as individuals, but as representatives of the railways for the purpose of devising ways and means for better methods in doing our work. The art of blacksmithing is not a finished one; that is, there is still considerable to learn concerning it. The very best minds in the world today are men who not only follow their vocations, but who make individual efforts to improve their efficiency through study and reading literature concerning their work. We should constantly be looking to improve ourselves, so that as the art progresses and new propositions are presented to us we will be fully capable of handling them. There is no place in the industrial workshop where more hard work, closer and more conservative calculations, and keener insight are required than in the forge and blacksmith shops. There is no class of men who watch the actual performance of the work in their departments more closely than the master blacksmith, in order to insure the safety of the public, who depend upon the strength and thoroughness of his work.

BENEFITS DERIVED FROM THE ASSOCIATION.

Several papers were presented on this subject, which clearly indicated the benefits the members have received from attending the conventions and reading the reports. The consensus of opinion was that although the benefits derived could not be given a monetary value the association has been invaluable to its members. The men are broadened by attending the conventions, and in many instances have learned of better ways of doing their work from their fellow members.

FLUE WELDING.

The methods of handling flues in the shop were discussed, special consideration being given to superheater flues of large diameter. The question of whether flue welding should be directly under the boiler shop or blacksmith shop was discussed, but no definite conclusions were reached, some thinking it should be under one, while others thought it should be under the other.

TREATMENT OF CARBON AND HIGH SPEED STEELS.

Special attention was given to high speed steel, as it is getting to be more common in the smith shops, and there still seems to be some question as to its treatment for various uses. It was generally acknowledged that the estimating of temperatures of these steels by their color could not be accurate within 200 or 300 degs. F., and the pyrometer was considered essential to get the proper results. However, the pyrometer should be carefully checked up and caliberated frequently to be sure that their readings are correct. One member uses the fusing point of common salt, which fuses in the neighborhood of 1,465 deg. F., as one way of checking up his pyrometer.

The question of why taps and reamers bend while being tempered was considered and various reasons were given for their doing so. Extreme care must be used in handling them to see that they are uniformly heated in all parts and the operation of tempering is carefully done.

While it was acknowledged that high speed steel has much less chance of being destroyed than carbon steel, it is believed that too much heat will have deteriorating effects.

DROP FORGINGS.

The reports on this subject were rather limited, as the majority of the members have had little experience in this class of work. The questions that were brought up considered largely the making and design of the dies. In a paper by John Cunningham (Union High School, Grand Rapids, Mich.), the location and design of the drop forge shop was considered. Mr. Cunningham said in part: "The location and design of the drop forge shop should be carefully considered, for owing to the nature of the work the shop will become exceedingly hot, thus decreasing the efficiency of the men and the output. The building should be situated so as to get as much fresh air as possible, and should be so constructed that during the summer months the sides and ends may be entirely opened, the ventilation being as important as the light. The building should be long and narrow and not over 70 ft. wide, which will allow ample space for two rows of hammers and furnaces. An overhead trolley system should be used for handling the dies and a ram for driving the keys holding the dies to the hammer."

CASE HARDENING.

Methods were described for case hardening various kinds of material. The question was raised as to whether or not the railways were spending too much time in doing this class of work. It was granted that the longer the material was in the furnace the deeper the case hardening would be, but the question was raised as to whether this hardened surface would not be deep enough if it only remained in the furnace one-half the time, for in many cases the part would not be worn down to the full depth of the ordinary case hardening before the lost motion would require the piece to be replaced. On the other hand, it was stated that the interior of the material itself would not be in as good condition as when the piece was kept in the furnace for a longer time.

FORGING MACHINES, DIES AND FORMERS.

Several photographs and detailed drawings were presented to the convention showing various dies and formers used on bulldosers and forging machines. These are of special interest at this time because of the great amount of such work that must be produced by the railways in making safety appliances for cars and locomotives. The material for making the formers was considered, as well as the way in which they should be treated. In many cases cast iron formers are used with steel inserts. G. W. Kelly, of the Central of New Jersey at Elizabethport, N. J., described a system of automatic control for forging machines that is in use in the Elizabethport shop as follows:

"We have a 5-in. universal Ajax machine, driven through gears by a 40 h. p. motor, and a 3½-in. machine equipped with the automatic control made by the Monitor Controller Company. The machine is started by simply pushing a button attached to the machine near the clutch of the locking lever. This will energize a series of relays in the controller box on the wall, which are so adjusted that the current fed to the motor will not overload the circuit and damage the motor. The system is so regulated that the machine will ordinarily attain full speed in about six seconds from the time the button is pushed. The machine is stopped by pushing another button. The system saves time for the operator, as there are no belts to shift, no switches to pull, and no rheostat to fool with. For the company there is a saving of electricity, as the machine will more likely be stopped when not in use; a saving in the life of the motor and perhaps in the wrecking of the machine. The ma-

chine may be 'inched' along as readily as before and the system on the whole has proved satisfactory."

SPRINGS.

Although this subject has been thoroughly discussed at previous conventions, considerable information was brought out that was comparatively new and interesting. H. D. Wright, of the Cleveland, Cincinnati, Chicago & St. Louis, Beech Grove, Ind., made an investigation of spring steel to see what would happen to the steel by resetting and tempering it 20 times in the same way as he would any spring that came into the shop for repairs. He found that a ⅜ in. x 3½ in. x 22 in. plate, which weighed 8 lbs. 8½ ozs. when new, would lose 1 lb. 8½ ozs. in weight and also that the steel gained 0.005 per cent. sulphur, and lost 0.03 per cent. manganese and 0.05 per cent. carbon.

It was also stated that the most economical way of repairing springs would be to have one spring plant on the system located near the general store, so that any new or repaired springs would be directly under the charge of the store department, and requisitions for new material could be easily filled. Vanadium spring steel was mentioned, but as it has not been used to any great extent the information which was brought out was limited.

FRAMES.

There are a large number of shops that use thermit to weld frames. The advantages obtained from thermit were said to be that it was easily made and that by making the weld a little larger than the original section of the frame it would stand up well in service. The proper annealing of the frames before they are put in service was a point that should be carefully considered. It was suggested that the annealing of parts of the frame to relieve strains after welding did not have any beneficial effect and in fact was often times detrimental. Various systems of making welds were discussed. Mr. Wright, of the Big-Four, stated that it was his belief that a large proportion of the frame breakages could be charged to the improper churning of the frames at the risers when they were being cast. It was generally conceded that there is always an element of danger in a weld, for although an expert welder may make it to the best of his knowledge he is not absolutely sure that it is true.

OTHER BUSINESS.

Other papers were presented on the heat treatment of metal, frogs and crossings, piece work and oxy-acetylene welding.

The following officers were elected for the next year: J. T. McSweeney, Baltimore & Ohio, Baltimore, Md., president; H. E. Gamble, Pennsylvania, Altoona, Pa., first vice-president; T. F. Buckley, Delaware, Lackawanna & Western, Scranton, Pa., second vice-president, and A. L. Woodworth, Cincinnati, Hamilton & Dayton, Lima, Ohio, secretary-treasurer. The convention closed Friday, August 23.

BRAZILIAN RAILWAY PROGRESS.

The message of the president of Brazil presented to the Brazilian national congress at the opening of its current session reviewed, among other things, the progress made in railway construction in that country during 1911.

The president said in part: The construction of the Madeira-Mamore Railway has been continued with regularity. During the last year 88 miles were opened to traffic, while 15 miles additional are ready to be opened from Villa Murtinho to Lages. As regards the final section, 24 miles long, from Lages to Guajar-Mirim, the terminus of the line, the roadbed is ready, so that by the end of the year the whole line, with a total extent of 218 miles, should be open to traffic. In accordance with the decree of December 4 last, the revision of the route of the Alcobaca-to-Praia da Rainha Railway, now known as the Tocantins Railway, has been proceeded with and the starting point transferred to the city of Cameta. The section between Kilometers 43 and 58 is now ready to be opened to traffic. The building of the Sao Luiz-to-Caxias Railway has been actively pushed and the sections from Caxias to Codo, 52 miles, and from Rosario to Itapicuru, 34 miles, will shortly be open to traffic. In order to supply the urgent needs of a great part of the highlands of Maranhao, at present served by no railway, the federal railway inspection department was authorized to make definite surveys for a line to start from the most convenient point on the Sao Luiz-to-Caxias Railway and run to the banks of the Tocantins. After due consideration the starting point was fixed at Coroata and the surveys have been commenced. By virtue of the revised contract made with the South American Railway Construction Co. (Ltd.), the lines from Girau to Cratheus, Crato to Joazeiro, and Amarracao to Campo Maior are being surveyed by commissions specially appointed for the service. The company has submitted for the approval of the government the definite surveys of the extension of the Baturite railway to Macapa, together with the Crato and Ico branches, those of the Sobral-to-Therezina railway, and those of the line which will serve the district of Uruburutama, the starting point of which will be at Itapipoca, the total length being 81 miles.

A STUDY OF BROKEN RAILS.

BY C. E. LINDSAY,

Division Engineer, New York Central & Hudson River, Albany, N. Y.

An analysis of reports of 229 broken rails on a certain trunk line, where the fracture was complete, showed that 182 of these were on the high speed passenger tracks and 47 on the low speed freight tracks, showing that speed is a very important element. Of these 229 rails, 49 were on the right hand side of the track and 180 on the left hand side. This is a condition that has been noted before, but for which no satisfactory explanation has been found. Sixty were on curved track and 169 on straight track. It would seem that rail breakages on curves would be greater than on tangent, but this does not seem to be the case. There were 184 of 100-lb. section of comparatively recent manufacture, and 45 of 80-lb. section of greater age. As to the cause of these breakages, from the best information obtainable, 17 were due to defective equipment, 149 were due to flaws and 63 to unknown causes.

An analysis of 240 partial rail fractures showed 118 on the high speed passenger tracks and 122 on the low speed freight tracks. The 118 above referred to were of 100-lb. section of modern manufacture and of these 25 were damaged by equipment, 14 removed on account of mashed head, 4 removed because of split web, one was broken at the joint, 29 had split heads and 45 were base failures—principally half moon pieces out of the base. Of the broken bases 34 were over the tie. The fractures in the low speed tracks were due to miscllaneous causes, and were in 80-lb. rail of older manufacture, 26 of them being base failures and 17 of these on the tie. The large percentage of base failures occuring on the tie may possibly indicate that the material is not strong enough or the section is not big enough, or the strain is too great under the conditions of the support on the tie to which the rail is exposed.

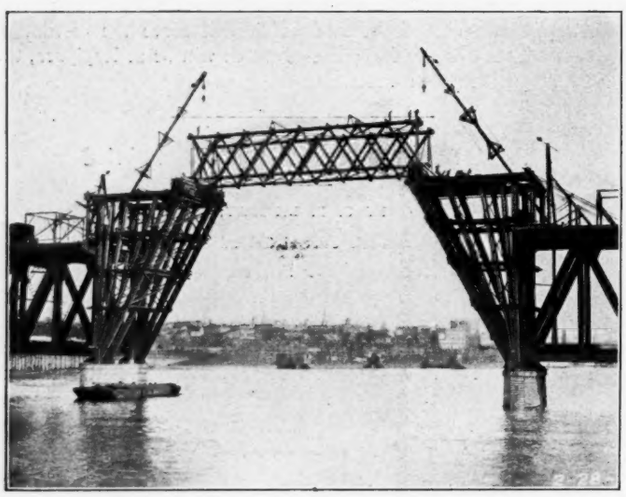
It is interesting to know that of the 229 complete fractures one was discovered by an outsider, 169 by automatic signals, 55 by trackmen, one by a signalman and three by train crews. Twenty-eight of these complete fractures in automatic signal territory did not affect the signal because the fracture was of such a location or character that the track circuit was not broken. Of the 240 partial fractures 232 were discovered by trackmen, one by a signalman, six by other employees and one by an outsider. These statistics speak very highly for the close scrutiny of the rail by railway employees, to the efficiency of the track circuit as a very important and helpful adjunct in safeguarding broken rails, and the fact that no accident resulted from any of the breakages gives well deserved testimony to the efficiency of the track forces.

ERECTION OF WILLAMETTE RIVER BRIDGE.

Oregon-Washington Structure Having Two Decks, Railway and Highway, and Three Piers, Cost $1,715,000.

The Oregon-Washington Railroad & Navigation Company has about completed its new lift bridge across the Willamette river at Portland, Ore., the plans for which were described in the *Railway Age Gazette* of July 14, 1911. This bridge, when finished, will have cost $1,715,000, and is located about 700 ft. up stream from the present bridge which it is to replace. The structure provides for two decks, a lower deck for a double track railway, and an upper deck for street railway and highway traffic.

The channel is crossed by three spans, two fixed spans of 287 ft. each, flared at the shore ends to provide for curvature of the railway tracks, and a center vertical lift span 220 ft. long. At the east end is a highway viaduct approach 305 ft. long, and on the west end a highway approach 512 ft. long.



Placing 120-Ft. Howe Truss.

Gallows Frame Placing 24-Ton Upper Sheave.

The vertical lift span provides for a railway deck having an independent vertical lift movement of 46 ft. This feature is accomplished by supporting the railway floor system and lateral truss on hanger posts from the upper movable span. Each hanger is connected to four cables, and is constrained to move vertically inside the corresponding vertical posts of the upper movable span.

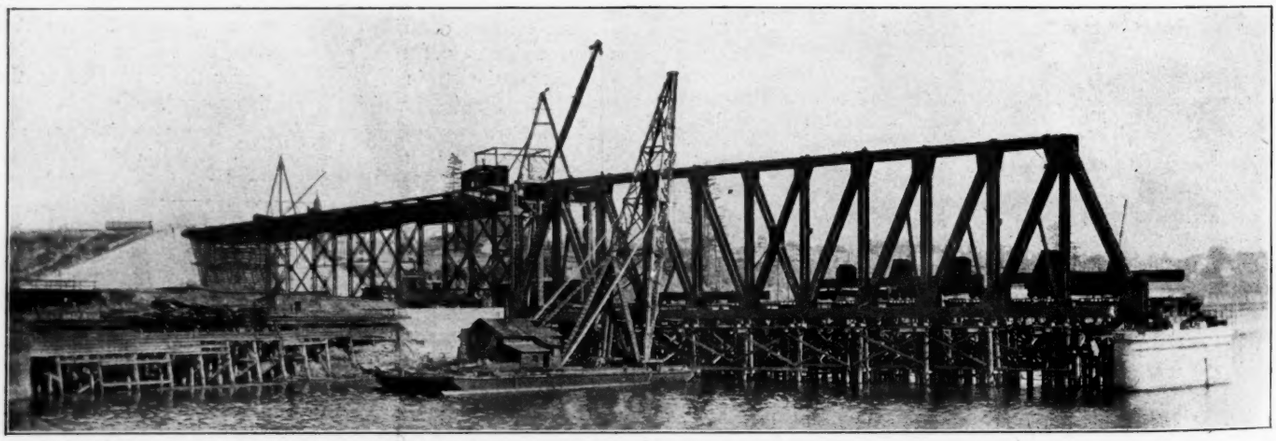
Both the railway deck and upper movable span are counterbalanced with concrete weights; there are two of these weights for the movable span weighing 866 tons each. For the lower, or railway deck, there are eight counter-weights, four on a side; the four weighing 212 tons.

The maximum vertical clearance for both decks will be 164 ft. above low water. The maximum independent clearance of the railway deck will be 72 ft. above low water. This clearance given by the railway deck will be sufficient to allow the passage of nearly all river traffic without disturbing the position of the upper span for highway service. River traffic under the old bridge requires as many as 134 openings in 24 hours, with an average of about 70 openings per day for the entire year.

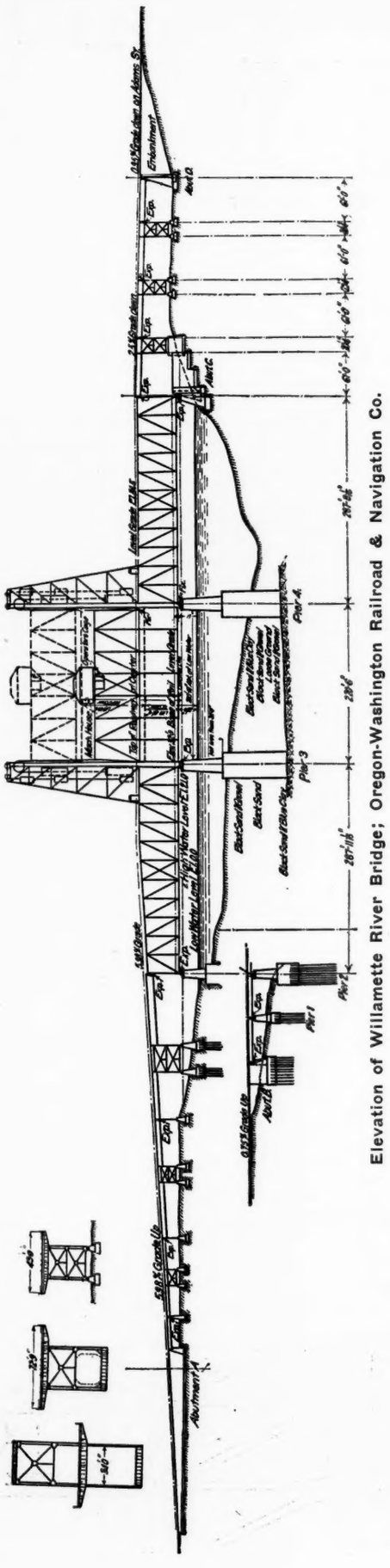
The tonnage in the new bridge is as follows:

East highway approach	399.8 tons
West highway approach	687 tons
Four 80-ft. deck railway girders	103 tons
East riveted span	2,230 tons
West riveted span	1,948 tons
Lift span with lifting deck	1,594 tons
Towers	799 tons
Trolley poles, handrail, gas-pipes, etc.	342 tons
Machinery and motors	484 tons
Total tonnage	8,686.8 tons

The steel was furnished by the American Bridge Company, and was delivered at the east of the bridge site in a temporary storage yard. Construction tracks were laid both on the east



Approach Span, Showing 110-Ft. Sheer Leg.



Elevation of Willamette River Bridge; Oregon-Washington Railroad & Navigation Co.

and west sides of the river, so that cars could be spotted conveniently for raising derricks.

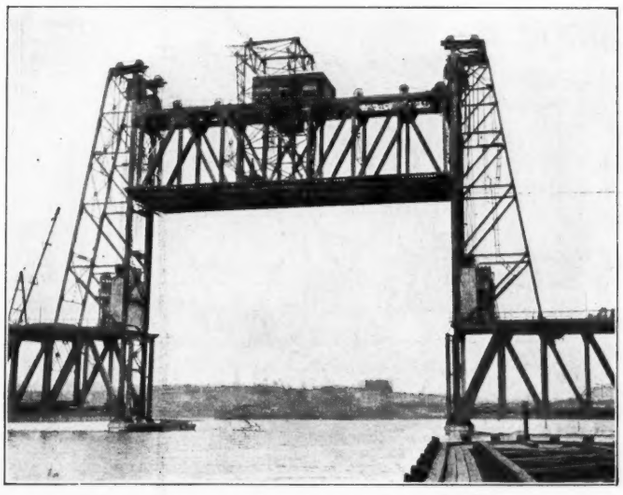
The contract for erection was given to Robert Wakefield & Company, Portland, Ore., with the understanding that the O.-W. R. & N. would furnish plans and designs for erection. The viaducts were raised with two 30-ton skid derricks, using a 45-ft. boom, one derrick for each side of the river. This apparatus placed the upper floor system and laterals for the fixed

Raising Steel to Upper Tramway.

spans and the lower members of the towers. Their heaviest lift was a 29-ton upper floor beam.

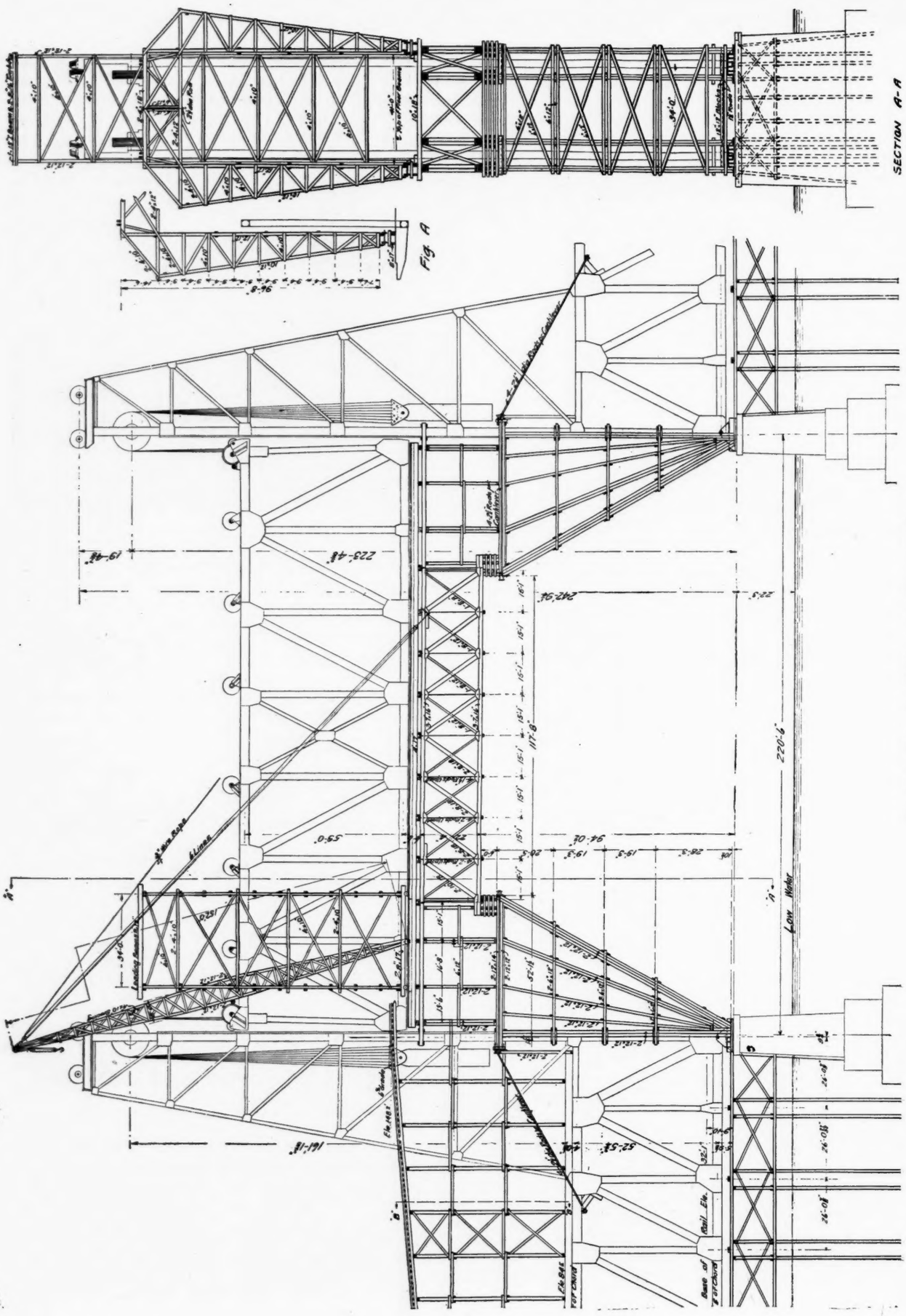
The fixed spans were erected on falsework, using double bents, with 22 piles. Raising and placing the truss members and lower floor was accomplished by a scow derrick, with 110-ft. sheer legs, constructed from four piles. A 54-ton top chord section was placed with this.

It was decided to erect the vertical lift span and railway deck at a sufficient elevation to allow the unrestricted passage of



Falsework Removed and Lower Deck Counterweights in Place.

river traffic so as to make this part of the erection as independent as possible of river conditions. A clearance of 116 ft. above low water was decided on. At the adjacent ends of the two fixed spans four wooden cantilever brackets were constructed; these were framed on scows and hoisted into place with the floating sheer leg derrick. Their bases rested on the piers, and their tops were anchored to the fixed spans with four 2½-in. rods for each bracket. On top of these brackets were placed four 120-ft. Howe trusses weighing 40 tons each.



Erecting Plan for Willamette River Bridge.

These were raised into place by using the two skid derricks rigged with 110-ft. booms. The iron for this falsework was taken from scrap of old spans removed from the company's line several years ago.

For erecting the towers and sheaves a gallows frame 152 ft. high was framed and raised into place on top of the Howe truss falsework. This was anchored back to the truss and hinged at the base so as to allow sufficient rotation to place any member of the towers. The heaviest lift for this frame was a 42-ton tower post section. Steel for these towers was loaded on cars and spotted directly beneath on the railway deck. By leaving out the stringers of two panels of the upper floor system, sufficient clearance was obtained to allow the passage of this material.

The members of the lift span were placed by a two-bent 96-ft. high traveler. Steel was delivered to this traveler by a creeper car running on a three-pile tramway supported on the upper deck of the east span and viaduct. Cars were spotted underneath the viaduct and the upper derrick hoisted material from these cars to the creeper car.

Simultaneously with the construction of lift span, its concrete counter-weights were cast in place on falsework. The forms for these counter-weights rested on sand boxes 18 in. deep and were set 18 in. above their proper position. This allowed sufficient play both for stretch of the ropes and ease in connecting the cables. As soon as the lift span was riveted the sand was allowed to run out of these boxes, thus swinging the lift span directly on the counter-weights and allowing the removal of the falsework.

The lower or railway deck is at present under construction. This will be erected on barges, a floor beam and two hangers being first riveted up and then raised to position. The concrete counter-weights for this deck are cast separately for each panel point and are at present supported on falsework on the upper deck. As soon as a panel point is in place it can be connected to its cables and supported by the counterweight. The intention is to place all these hanger posts with floor beams first, and then fill in with the stringers and lower lateral truss.

The contract for the sub-structure was awarded to the Union Bridge & Construction Company of Kansas City, Mo., and represents about 30,000 cu. yds. of concrete. The channel piers were sunk by the open caisson method. They were landed on cement gravel 123 ft. below low water. The six dredging wells were excavated 10 ft. deeper than the cutting edge. Concrete was deposited under water in bottom dump buckets.

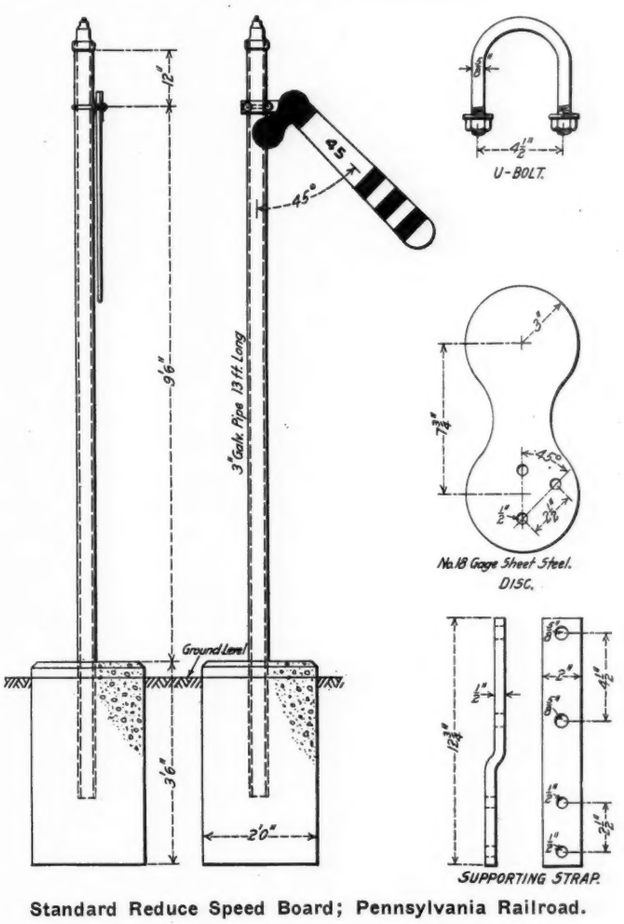
This work was executed by Waddell & Herrington, engineers and patentees, of Kansas City, Mo., under the direction of John D. Isaacs, consulting engineer, Harriman Lines, and George W. Boschke, chief engineer, and George T. Forsythe, bridge engineer of the Oregon-Washington Railroad & Navigation Company.

PIPE LINES IN ROUMANIA.—The production of petroleum has increased so in Roumania that certain railway lines are so occupied with carrying it that they have little capacity for anything else. The manager of the state railways, therefore, asked authority to lay pipe lines for the oil, and he was granted the sum of $3,500,000 for that purpose.

RAILWAY TAXATION IN SPAIN.—For a number of years none of the lines in Spain paid any interest on the capital invested, but recently they have been paying an average rate of interest of 4 per cent. The tax levied by the government on the railways is 5 per cent. of the freight receipts, 25 per cent. on ordinary passenger tickets and 1 0per cent. on reduced passenger tickets if the reduction exceeds 25 per cent. This involves payment of heavy taxes by all the lines, one line having paid to the government in 1911 over $4,000,000, including free transportation, which the Spanish railways are compelled under their concession to grant.—*Consular Report.*

PENNSYLVANIA SPEED LIMIT POST.

Speed limit posts are to be set up at curves along the Pennsylvania Railroad throughout the length of the main line from New York to Pittsburgh. Each curve over which the limit of speed is 45 miles an hour or less will have a signal at the entrance of the curve indicating caution; and another, indicating "proceed," at the point beyond the curve where regular speed may be resumed. The signal to be used is of the semaphore type, like that which has been used for the same purpose on the Pennsylvania Lines West of Pittsburgh for some years past, and its style is shown in the illustration. It is familiarly called the "coon tail" signal, the transverse stripes on the blade being alternately black and yellow. The main body of the blade is yellow. On both signals the arm is fixed and motionless; at 45 deg. from the horizontal for caution and straight down for proceed. There is no light for a night indication.



Standard Reduce Speed Board; Pennsylvania Railroad.

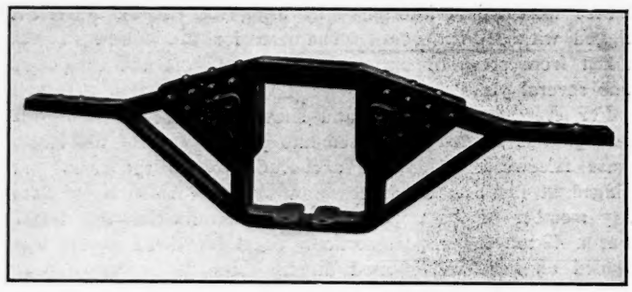
The drawing herewith shows the caution signal, the parts for both signals being identical. The post is 13 ft. long, 3 in. in diameter, and made of galvanized iron pipe. The concrete foundation, 2 ft. square, is usually 3 ft. 6 in. in depth. The metal disk, to which the wooden arm is fastened, is made of No. 18 gage sheet steel, and the supporting strap is of wrought iron ½ in. thick, 2 in. wide and 12¾ in. long. The strap is fastened to the post by a U bolt. The wooden blade is 3 ft. 7 in. long, and its back side is painted black.

CHINESE MINISTER OF TRANSPORTATION.—The new Chinese republic has selected as minister of transportation, Dr. Alfred Sze, in Chinese, "Sheh-Chai-chi." He was educated and apparently named in the United States, and is said to be the leading spirit in the Chinese cabinet.

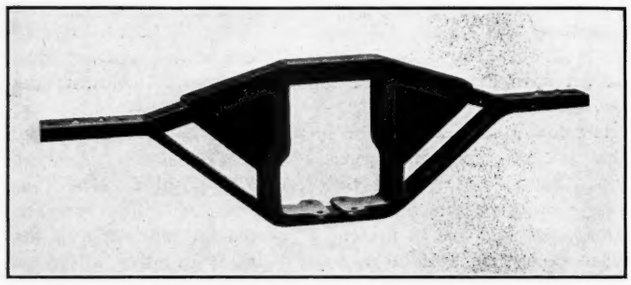
STEEL SIDE FRAMES FOR FREIGHT CAR TRUCKS.

A rolled steel truck side frame for use on freight cars has been developed by the Murphy Equipment Company, New York. The different members of the frame are connected either by rivets or by welding, as desired, oxy-acetylene being used for the welding. The unique feature of this frame is that there are no castings used in it, all the members being made of rolled steel sections. A channel is used for part of the compression member, being bent to form the column guides, as shown in the illustrations. These guides have an enlarged opening at the bottom to allow for the insertion of the bolster. A 4-in. x 1¼-in. steel bar corresponds to the lower arch bar of an ordinary arch bar truck. Gusset plates reinforce the bends in the channel member and are welded by the oxy-acetylene process, in both the riveted and the welded frames. A strut extends across the top of the column opening, and is fitted with a filler channel, which acts as a spacing piece between the column guides. This strut is riveted or welded, as the case may be, to the compression member.

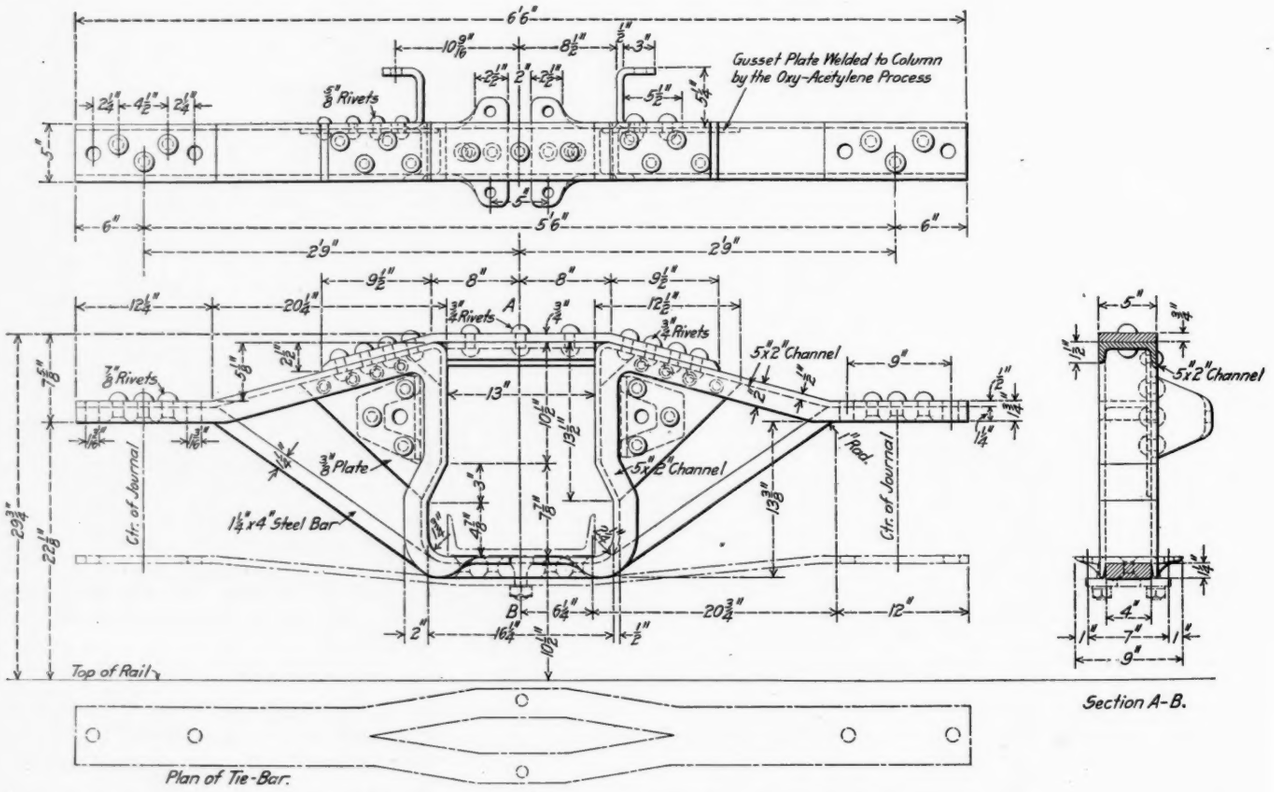
A test has been made on an 80,000-lb. capacity riveted frame, a drawing of which is shown herewith. The frame was supported during the test exactly as it would be in service, the journal boxes being replaced by a pair of steel clamps. The frame was loaded by a hydraulic press and varying deflections were measured from 80,000 lbs. to 210,000 lbs., the greatest being ⅜ in., with no permanent set at 180,000 lbs. At 210,000 lbs., however, a deflection of 9/16 in. was noted with a permanent set of ⅛ in. The frame was then loaded to destruction, and at 412,000 lbs. the ¾-in. rivets over the journal box at one side were sheared, the other connection remaining intact, but apparently strained. The frame was then straightened and the rivets that were sheared were redriven and the frame readjusted so as to make a side load test similar to that which would occur in practice. The load was applied at the center of the column guides, and the frame began to take a permanent set at 115,000 lbs. With a load of 167,000 lbs. the set was quite appreciable, approximating ⅝ in., and at 232,500 lbs. the frame became badly bent and a permanent deflection of 1⅞ in. was noted. These frames are claimed to be stronger, lighter and much cheaper than cast steel, being more flexible and resisting the sudden shocks and vibrations more ably than would a cast steel truck. They are designed to conform to the M. C. B. requirements, and are so arranged that any design of brake hanger may be used with them.



Riveted Forged Steel Truck Side Frame.



Welded Forged Steel Truck Side Frame.



Riveted Truck Side Frame Built Up of Rolled Steel Members.

FREIGHT CLASSIFICATION ON AMERICAN RAILWAYS.

Third Article. Theory of Carload Ratings and Difficulties of Applying Them; Special Problems of Minimum Carloads.

BY WILLIAM Z. RIPLEY,
Professor of Economics, Harvard University.

The amount of reduction to be allowed on shipments by carload as against consignments in small lots is a nice and most perplexing detail of classification. Attention has already been directed to the great increase in distinct carload ratings which has accompanied the development of trade. As affecting the interests of shippers in different parts of the country, the question came up almost immediately after the passage of the Act to Regulate Commerce. In the so-called New York Board of Trade case[1] complaint was entered by eastern merchants against a great increase in the number of wholesale ratings in 1888. More than five times as many commodities as before were abruptly given lower rates when shipped out of New York by the carload. Inasmuch as a very large proportion of groceries and other supplies went by box or package, this reduction accorded on carload shipments, greatly benefited the jobbers all through the West and South. Under the new conditions provincial middlemen could buy in carloads; and then re-distribute from local centers much more advantageously than before. The commission, called upon to decide as to the relative rights of these two classes of jobbers, attempted to bring about an adjustment which should, in the main, conform to the existing trade conditions; and yet should take into consideration the relative cost of service in the two cases. The competitive struggle between southern and western dealers revealed in these early proceedings has cropped out continually in official proceedings ever since that time. In a modified form the same question came to the front in connection with the general advance of freight rates in 1900.[2] The changes at this time were two fold—not only modifications in the number of carload ratings, but also an altered differential or spread between the charges for the two sorts of shipments. The question is a vital one to all the shipping interests of the country. It is one of the most troublesome elements in the establishment of a uniform classification for the United States as a whole. For inability to standardize reasonable differences between carload and small shipments, under the widely different trade conditions and practices in various sections of the country, is an almost insuperable difficulty in the way of reform.

The economic justice of allowing a carload shipper lower rates than one who ships in small lots is apparent, on account of the difference in the cost of such service to the railways. This has been recognized by the Interstate Commerce Commission and the courts as beyond question. Not only the amount of paying freight in relation to dead weight; but the cost of loading and unloading, of billing or collection, and of adjusting damages—all of these elements of cost are noticeably less in the case of a full carload. Turning from these considerations of cost to those prescribed by what may be called traffic principles, the difficulty in arriving at a just determination may be easily appreciated. Glass battery jars in less-than-carload lots were at one time charged from New York to Atlanta, Ga., second-class rates, namely, 98 cents per 100 lbs. The same commodity when in carload shipments (not less than 20,000 lbs.) was rated as fifth class; in which case the charge from New York to Atlanta became 60 cents. Here was a plain difference of 38 cents per 100 lbs.—upward of 60 per cent. greater charge—to the small shipper whose business or capital was insufficient to warrant shipments to such an amount. Two results of such discrimination are possible. In the first place, the large shipper is enabled to undersell his smaller competitor, and perhaps to drive him out of that class of business. This may take place as between two dealers, both located in the South and buying their supplies from New York. The second result is that under such rates it is impossible for the manufacturer or northern jobber to sell direct from New York to the retailer in the South, in competition with the provincial jobber there located, who ships his goods in at the cheap carload rate and distributes them thereafter. The problem thus concerns at the same time both the small local shipper or dealer, as against a more formidable provincial competitor; and also the remote jobbers as a class against the whole group of local middlemen. In the latter case, sometimes, as in the South, the question is still further complicated by the southern basing point system, under which the provincial jobber must re-distribute the goods which have already been shipped in on a low carload rate to the country stores. And, locally, also, there is the immanence of water competition by sea and river to be kept in mind. Boat charges are based upon space requirements rather than weight. This introduces further important considerations in fixing the spread of charges.

The problem as it affects the manufacturer is akin to that concerning the jobber. Originally, as a matter of fact, the carload reduction was essentially a manufacturers' rating, especially for goods in which the cost of raw material formed a large part of the price of the finished product. The relations of the carload rate on the former to the less-than-carload rate on the latter, it is obvious, may readily become an important element in industrial success. It is plain enough that carload charges under such circumstances should be substantially less than those upon small consignments; but that is far from affording a satisfactory answer to the question as to the proper spread to be allowed between the two.

Obviously, in any representation as to the reasonableness of the discount which shall be allowed on carloads, either on the basis of cost or of traffic principles, the interests of localities are commercially pitted one against another. To change the illustration, the New York or Chicago jobbing house desiring to sell its goods directly to the retailers throughout the West, wishes to have a relatively low rate on such small shipments as the retailers in lesser places alone can afford to purchase. Participation in this distributing business, however, is resented by the middlemen located in western centers—Omaha, Denver, Kansas City, etc.—who all insist that there should be so wide a difference between carload and less-than-carload rates that they may ship in their wholesale purchases at a low rate, and thus compete in their own territory with the manufacturer in the East or the jobber in New York who desires to sell direct. Comparison of the classifications in different parts of the country reveals the influence of these local interests. The railways in Official Classification territory desire, of course, to build up the manufacturing and jobbing cities tributary to them. This can best be done by encouraging the growth of eastern jobbing centers, stimulated by as low rates for retail as for wholesale shipments. The railways in the western and southern territory, on the contrary, are obliged to consider the claims of their constituents, and to correspondingly minimize the advantages which foreign competitors of their local middlemen enjoy. Another consideration must also be kept in view, namely, that carload ratings can only be accorded when business has developed a magnitude sufficient to permit shipment in that volume. The growth of the volume of business in general, therefore, might be normally expected to produce an increase in

[1] 3 I. C. C. Rep., 473.
[2] United States Industrial Commission, XIX, p. 281.

the proportion of carload ratings. Experience, as we have seen, confirms this view. The normal development, then, is toward an increase in the number of lower rates quoted for carload lots. This is retarded only by the influence of the jobbers and manufacturers in the eastern trade centers, who insist that they shall be permitted to compete on even terms with provincial jobbers by making their shipments direct in small lots at rates approximately as low as the local jobbers pays on carload lots. This question is an exceedingly important one, requiring the balance of opposing interests to a nicety.

Not unfamiliar aspects of the problem of carload ratings are revealed in a recent case before the Interstate Commerce Commission, concerning milk rates in New England.[1] And yet the normal order is reversed. Usually complaint is made of the denial of carload ratings. In this instance a plea was entered for a useable small unit rate. The dispute was precipitated by a deadlock in 1910 between the three large Boston milk contractors and the farmers' associations of several states. The producers, failing in their demand for an increased price, declined to furnish milk at the old figure. A famine resulted, which drew the attention of the public sharply to the system under which the Metropolitan district of Boston was supplied. The belief prevailed that the peculiar transportation conditions known as the "leased car system," which had existed for half a century, was mainly responsible for the tight monopoly of the milk supply. The Massachusetts legislature, after an investigation, finally passed a law providing that no carrier should charge more for the transportation of milk by the can than was charged for larger quantities; and also that the same facilities, icing, for example, should be furnished in the one case as in the other. This settled the intrastate charges; but it left matters as before for all the other New England states contributing to the market. In this form the controversy was brougth before the federal authorities, which exhaustively examined into the methods of transportation as affecting all parties concerned. The contrast with the older elastic decision as to milk ratings in New York was sharp in many respects.[2] This earlier controversy had to do with relative rights of nearby and distant producers. It was a question of the element of distance as affecting a local or territorial monopoly. The Boston case, on the other hand, was rather a matter of carload ratings, than of graduation of charges according to the length of the haul. The monopoly in this instance was that of contractors who had succeeded in getting entire control of the business by reason of the wide spread between charges for milk by the can and by the "leased car." Shipments by the can from the independent farmer were rendered practically impossible since they had to be carried in the baggage car and were liable to spoil through lack of refrigeration.

By contrast with the New York "open car system," the New England plan from the standpoint of cost of service alone seemed to offer several advantages. A caretaker in constant touch with the farmers exercised supervision both over milk and cans. This might insure a heavier loading and more prompt service at terminals; result in the operators providing the best facilities for handling the supply; and allow surplus milk to be directed to other uses without waste. A large investment was also borne under this system, dependent upon its continuance for a reasonable return. On the other hand, denial of equally low rates with the same facilities for refrigeration to the single can shipper had undoubtedly fostered a monopoly. The railways, conforming to the new Massachusetts law, abovementioned, offered to furnish and operate a car suitable for independent shippers on condition that 600 cans should be tendered for shipment. But it denied its obligation to furnish icing facilities, which latter, of course, were absolutely necessary for the success of the competitive service. To be sure, the leased car controlled by the contractors was theoretically open to all, on condition of a small charge for icing; but the farmers contended that independent shippers ought not to be compelled thus to deliver over their property into the hands of competitors with all the accompanying exposure of their business relations. In the light of all these complications the commission decided that a per can rate with the necessary refrigeration, and bearing a proper relation to the carload rate, ought to be established. And there the matter rests at this time.

The problem of mixed carloads, also, is a difficult one to adjust to the needs of primary and secondary distributing points.[1] It is oftentimes of vital importance to a small jobber to be able to make up a carload of miscellaneous packages. His business may not be large enough to permit him to enjoy the advantage of a carload rate on any single commodity. Or the independent meat packer may be greatly benefited by a rule which permits him to bulk his soap and other by-products with other goods in securing a wholesale rate. Why may a paper manufacturer not combine paper bags and wrapping paper in one territory as well as another? In this regard the rules in the West and South are naturally much less liberal than in the East. The privilege of mixture has been given only to a limited extent to jobbing and manufacturing centers by means of commodity tariffs. Such mixture is usually restricted to analogous articles, such as agricultural implements, furniture, or commodities intended to serve a joint purpose. The recent bitter protest against the discontinuance of the right to ship binder twine with agricultural implements is a case in point. On the other hand, eastern railways are a unit in opposing the bulking of separate shipments in carloads when owned by different shippers. The western and southern roads do not specifically forbid it. All such differences come to the fore in any attempt to unify the practice of all the carriers of the country under a single set of regulations.

Assuming the reasonableness of a difference in charges between carload and small shipments, where shall the dividing line be drawn? This is the important and perplexing problem of minimum carload rates. Turning to our excerpt from the Western Classification at the head of the first chapter,[2] it appears that 24,000 lbs. of advertising matter, N. O. S., must be shipped at one time in order to warrant a carload rate. Under such circumstances a consignment of 20,000 lbs. would be classified first instead of third class—the difference in rate varying according to distance, but in all cases being substantial. Between St. Louis and St. Joseph, for example, the charge would be 60 instead of 35 cents per 100 lbs. Were the minimum weight but 15,000 lbs., as in the case of Harvesters under the Southern Classification, this particular shipment of advertising matter would enjoy the full benefit of wholesale charges.[3] From this instance, it is apparent that the point at which the minimum carload weight falls, is of great importance in the determination of the actual rate—an importance also dependent, of course, upon the spread between carload and less-than-carload charges. It is also evident that minimum carload ratings may readily be used as a means of advancing charges. If, as appeared in a

Official Classification—	
Scrap zinc	36,000 lbs.
Acetic acid in carboys	24,000 lbs.
Western Classification—	
Advertising matter	24,000 lbs.
Advertising racks, iron	30,000 lbs.
Southern Classification—	
Zinc concentrates	40,000 lbs.
Fodder shredders	12,000 lbs.
Harvesters	15,000 lbs.

Search through the entire list would doubtless disclose a far wider range, with coal or iron at 90,000 lbs. or more, and feathers at the foot of the list.

[1] 22 I. C. C. Rep., 303.
[2] 7 I. C. C. Rep., 92.

[1] Samuel O. Dunn, *Railway Age Gazette*, September 10, 1909, p. 463. Cf. 12 I. C. C. Rep; 510; 9 I. C. C. Rep; 440; and 23 I. C. C. Rep; 540.
[2] *Railway Age Gazette*, August 16, 1912, p. 283.
[3] The following wide variations as between the different classifications appear in these excerpts alone, varying from 40,000 to 12,000 lbs. in the Southern Classification, for instance.

recent case,[1] the minimum carload for wool in sacks was advanced between 1896 and 1912 from 15,000 to 20,000 lbs., the effect upon the shipper of a consignment of 18,000 lbs., for example, would be as truly an increase of charges as if the freight rates themselves had been actually advanced. For under the new schedule, he would be compelled to pay less-than-carload charges instead of the lower carload rates. Moreover, it is apparent that minimum carload weights may seriously enter into commercial competition in a number of ways. If 45,000 lbs. of raw cotton by a special round-bale process can be loaded upon a standard car; when but 25,000 lbs. of the ordinary square bales could be carried by the same equipment; it is evident that tariffs based upon the higher minimum would especially favor one set of competitors as against another.[2] They might, in fact, be sufficient to turn the scale entirely in favor of the round-bale system throughout the South. Granted, however, that such heavy loading makes for economy in operation, it is clear, nevertheless, that the carload minima must be so established as not to discriminate against the great bulk of shipments of the more common sort. All along the line one meets with such illustrations of the bearing of this minimum carload upon rivalry in business. Large shippers are continually striving for a high minimum. The small shippers oppose it for the same reasons. In a similar way the interest of the manufacturer distributing his goods direct, in competition with middlemen, is vitally affected.[3]

Car capacity, both as regards ability to load and to carry economically, is the principal factor in the determination of minimum carload rates. It is largely a question of relative cost of operation.[4] Reference has already been made to the great economy incident to the use of large cars, whereby the paying load becomes less in proportion, to the dead weight. This, of course, largely accounts for the steady increase in carload capacity in recent years. But the question is even more complicated. An adjustment must be made between two main groups of freight: first, that which is sufficiently heavy to be readily loaded to the minimum weight in ordinary cars; and, secondly, light and bulky goods of which the common car will contain but a small proportion in bulk of its truck capacity by weight. Fortunately, we may evade the moot point as to whether a carrier is entitled to the same revenue from a given vehicle, whether it be loaded with heavy or light goods; that is to say, whether the rate ought properly to decrease per pound with increase in the density of the lading. This is a technical matter as to cost. But it carries certain implications of considerable importance commercially, as will shortly appear.

The difficulty of conforming carload minima upon light and bulky articles to those on heavier goods has appeared with each attempt to standardize equipment. Widely divergent rules in the three main classification territories still cause great confusion in this regard. There is a constant temptation to construct extra long or wide cars, particularly in the western states, in order to assist the manufacturers of such light and bulky products as furniture and agricultural machinery in their competition with dealers in the East, shipping under Official Classification requirements. In other words, the penalty carried under the rules as to minimum carloads for the use of cars larger than the standard, has been much less in the West than in the East and South. The situation has been further complicated in some instances by the arbitrary action of state railway commissions. The experience in this regard is illuminating as again showing the extreme delicacy of adjustment in such matters under the stress of commercial competition. The short-line distance between the Missouri and Mississippi rivers lies entirely within the state of Missouri. It governs, as we have already seen, the entire rate structure in this part of the country.[1] This commonwealth some years ago by law fixed a carload minimum of 20,000 lbs. for furniture, agricultural implements, and wagons. As it is not practicable to attain this minimum load on an ordinary standard car, the Missouri shipper was stimulated to demand larger equipment in order that he might avail himself of the lower rate for carload lots. The local railways accordingly built such cars, which of course, traveled far beyond the limits of this single commonwealth. This forced other western roads, in order to protect their clients in the same markets, to undertake a similar policy. The result is that extra large equipment is relatively more common throughout this territory; thereby conferring a distinct advantage upon western shippers of such light and bulky freight over their eastern competitors. In pursuance of this same policy of protection, the western roads have also enforced distinctly favorable rules as to carload lots applied to several small cars instead of one large one.[2] These troublesome details are given in the hope that they may show how far the ramifications of trade competition extend. They re-enforce the conviction that any reform of classification must be a matter of extreme difficulty; and, if undertaken at all, must be done under governmental compulsion and by a single universal reform rather than by any attempt at piece-meal improvement.

Next to ability to load and carry, as a determinant factor in fixing minimum carload weights, the consuming capacity of the market must be considered. A reasonable minimum carload in the East might well be unfair in the West or South. An old-established factory in New England might satisfactorily use a quantity of raw material which in a carload lot would overwhelm a western or southern plant. Thus it comes about that minimum weights on the same goods may vary widely in different territories; being higher in the East than in the West, and least of all in the South. The problem, therefore, of standardizing carload rates throughout the country, unfortunately becomes exceedingly difficult. A compromise will fail to satisfy anybody. Moreover any such change of mimimum carload weights at once necessitates a remodeling of the particular distance tariff to which it applies. This point was well illustrated in a recent case.[3] A railway accepted for the same carriage at different times two carload shipments of lime from a given concern. On the one, a rate of 34 cents per 100 lbs. was based upon a minimum carload weight of 24,000 lbs. On the other 29 cents was assessed upon a minimum of 30,000 lbs. The carrier alleged that these differences in rates per pound were entirely compatible in view of the difference in carload minima. It then appeared that these minima, especially with a perishable commodity like lime, varied considerably according to destination. Large distributing centers were given low rates on high minima, while small towns, consuming relatively less, were best served by a lower carload minimum to which a higher rate per pound was applied. In other words, the close interrelation between the rate and the minimum was a matter of great commercial importance.

The relation of carloads to consuming capacity of the mar ket in an element in the trade policy of protection to clients, extended by the railway. The difficulty of properly relating rates upon raw and finished products has already been discussed. Carload minima must also be considered in this connection. Why should 50,000 lbs. be prescribed as the carload limit on corn to Texas points, when the limit on corn-meal is only 30,000 lbs.? Evidently differences in loading capacity are inadequate as an explanation. Nor can this be accounted for on the ground of any difference in mere cost of carriage. The explanation is purely commercial—springing from the competition between northern mills and mills in Texas, both making use of raw material from the same fields. A heavy carload minimum is entirely practicable on corn for the Texas miller; but an equally heavy carload re-

[1] 23 I. C. C., Rep; 158.
[2] 11 I. C. C., Rep; 328.
[3] Changes in minimum carloads since 1887 by commodities are fully described in Railways in the United States in 1902, I. C. C. Rep., 1903, Part II, p. 17. Their relation to rate increases is evident.
[4] Strombeck, Classification, p. 35 *et seq.; Railway Age Gagette,* June 30, 1911, p. 1696.

[1] *Railway Age Gazette,* September 24, 1909, p. 553, Samuel O. Dunn, best treats this topic.
[2] Cf. the "two-for-one" rule in the Indianapolis case.
[3] 23 I. C. C., 259; also 23 I. C. C., 226.

quirement on corn-meal would shut out the northern miller entirely from many local points. For the market at these small places is, of course, relatively restricted.[1] There can be no doubt that every feature of classification, even down to the last minute details of carload minima, stands in such intimate relation to commercial competition, that to disturb it in one regard may entail the most far-reaching and unforeseen consequences.

(To be concluded.)

CHICAGO UNION TERMINAL PLANS.

In an article in the *Railway Age Gazette* of August 23, page 354, reference was made to the plans for, and the location of, the projected new Union station in Chicago. The accompanying illustrations, which were received too late for publication last week show more clearly than descriptive reading matter can the scheme the Chicago Plan Commission desires to see carried out.

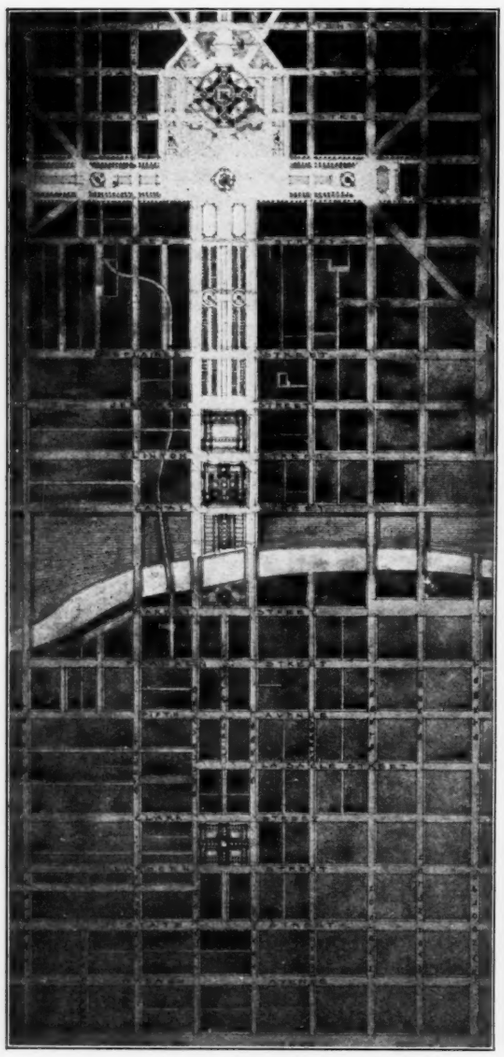


Fig. 1—Proposed Relation between New Chicago Union Terminal and Other Buildings.

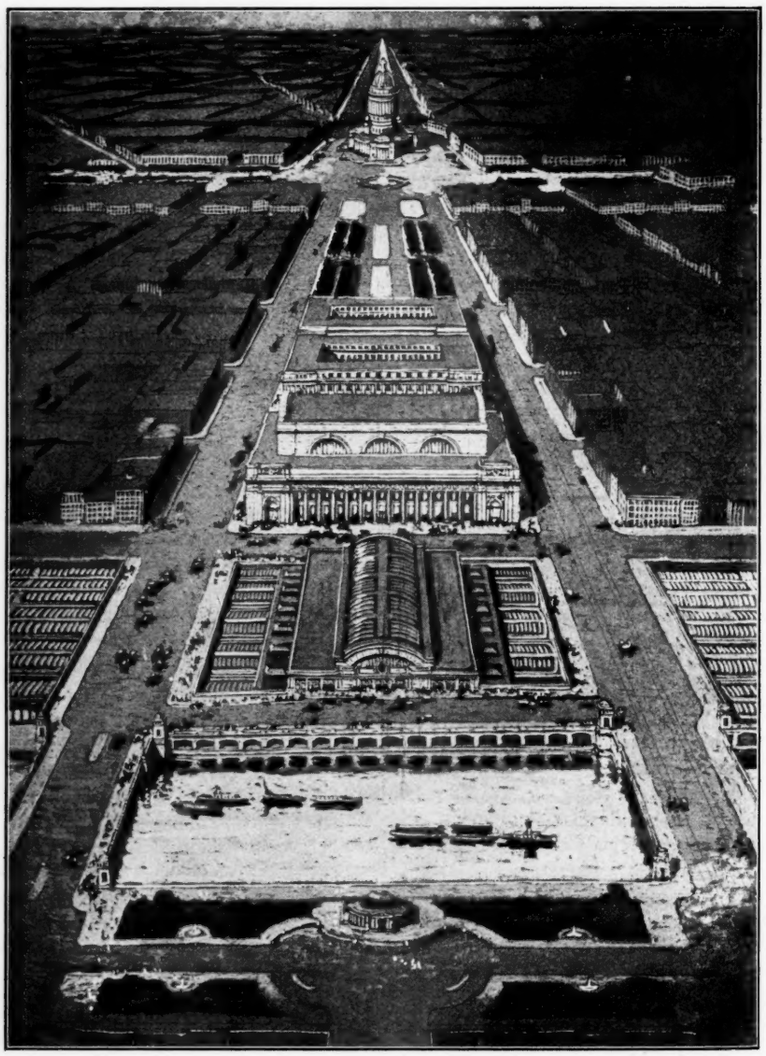


Fig. 2—Proposed Civic Center, with New Union Terminal in Foreground.

Fig. 1 shows how the Union terminal would be located relatively to the various streets and to other public buildings. The building shown bounded by Clark, Dearborn and Adams streets and Jackson boulevard is the present post office. In the block immediately west of the river are shown the concourse and train sheds of the projected station, and in the block bounded by Canal, Jackson, Adams and Clinton is the station proper. In the block just west of it is the proposed new post office building, and in the distance just west of Halsted street is the west side "civic center," for which the scheme of the Plan Commission calls.

Fig. 2 shows more clearly the proposed arrangement of streets, buildings, etc., west of the river. In the foreground is the Chicago river, with Adams street and Jackson boulevard carried over on bridges. Quincy, the street between these two, is carried under the river in a subway. Beyond the river are, in order, the concourse and train sheds of the new station, in the next block the head house of the station, and next the projected post office building, and in the distance the "civic center" on Halsted street.

The new general office building of the Burlington, one of the Union Station lines, is being erected at Jackson and Clinton, just across the street from where the new terminal is to be built.

[1] 11 I. C. C., 223.

Night Trains in Java.—The Dutch have a considerable railway system on the populous and productive island of Java. Hitherto there have been no night trains on them. They ran only between 5 a. m. and 7 p. m. Now traffic presses and some night trains have been put on.

THE RAILWAYS' CASE AGAINST THE ENGINEMAN.

W. M. Duncan, attorney for the railways in the arbitration between the eastern railways and the Brotherhood of Locomotive Engineers, has submitted his brief. Warren S. Stone's brief had not been made public at our time of going to press. A summary of Mr. Duncan's brief follows:

The years 1910 and 1911 witnessed a re-adjustment of the wages of employees of the railways involved in this controversy, as a result of which the enginemen obtained an annual increase of $4,444,230, or 10.84 per cent. The enginemen now demand an increase in the rates of pay and certain changes in the rules of service, which, if applied against the calendar year 1911, would have increased the compensation to the enginemen $7,172,545, or 17.71 per cent., the percentage of increase varying from 10.4 per cent. on the Bessemer & Lake Erie to 56.36 per cent. on the Coal & Coke Railroad.

There is every reason to suppose that a concession to the demands of the enginemen will require a re-adjustment of the wages of all other classes of railway employees, and it has been estimated that such re-adjustment will increase the wages of all railway employees approximately $67,000,000.

The average annual wage of enginemen for the year 1900, according to the reports of the Interstate Commerce Commission, was $1,135; the average annual wage of enginemen, according to the same authority, for the year 1910, was approximately $1,356. With the increases resulting from the wage adjustment of 1910 and 1911 it is fair to assume that the existing average annual wage of enginemen is at least $1,500. It is now proposed to increase this by approximately 17.71 per cent., or about $265 annually, making the proposed average annual wage of the engineman approximately $1,765.

It is apparent that ultimately, if not immediately, these *increases in wages must be borne by the public and that the greater portion will fall on that part least able to bear it, namely, those whose average annual wage is considerably less than the existing average annual wage of the engineman.*

The issues to be determined by the board of arbitrators are the demands of the enginemen, which, for the purpose of convenience, may be classified as follows:

1. The adoption of the principle that wages and rules of service shall be standardized throughout the eastern territory.

2. The adoption of certain standard rates of pay and certain standardized rules of service resulting in increased compensation to the enginemen.

3. The adoption of the principle that locomotive enginemen shall have the sole right to operate the motive power where it is changed from steam to electricity, or to any other motive power, including the right to operate electric and multiple unit trains entering upon steam tracks, or tracks formerly operated by steam, or where trackage rights are leased to holding companies; and the adoption of the principle that electric service shall be governed by the schedule covering rates of pay and rules of service now adapted to steam.

STANDARDIZATION OF RATES AND RULES.

The railways claim that the demand for certain increased rates of pay and certain advantageous rules of service applicable to all roads operating in the eastern district should not be granted, because:

(A) The proposed standardization is not real, as evidenced by the schedule itself demanding:

1. That existing rates of pay or better working conditions shall not be reduced or changed by the proposed rates or rules.

2. That general committees of adjustment shall retain the right to adjust matters not decided by this conference.

(B) It is impracticable to fix a standard rate of pay or standard rules of service applicable to so many roads operating in a territory so extensive, and whose operating conditions are necessarily different, materially affecting the value of the enginemen's service on different roads, due to:

1. Dissimilar physical characteristics on:
   (a) different roads,
   (b) different parts of the same road.

2. Varying traffic conditions represented by volume prevailing on
   (a) different roads,
   (b) different parts of the same road.

3. Marked variations in earning capacity of the several roads, necessarily affecting ability to pay, due to
   (a) varying operating conditions,
   (b) varying volume of traffic.

(C) Standardization is inequitable as:

1. It fails to recognize a variation in wages in different localities.

2. It places an undue burden on the weaker lines, requiring them to pay a wage schedule determined, in most instances, by the ability of the stronger line to pay, ultimately resulting in impairing the usefulness of the weaker line.

(D) The doctrine is not supported by precedent, as is claimed by the enginemen, as evidenced by

1. The decisions of arbitration boards in proceedings involving consideration of the doctrine.

2. An examination of the rates of pay and rules of service in
   (a) the southwestern territory, and
   (b) the western territory.

AGGREGATE COMPENSATION.

The aggregate compensation received by enginemen is determined not only by the rates of pay, but also by the rules of service affecting the method of calculating the miles or the hours, or determining what constitutes extra service and overtime, to which the rates of pay shall be applied. *One factor should not be changed without due consideration to its relation to the other factor, as well as to the effect of such change upon the aggregate compensation of the engineer.*

The railways claim that the existing rates of pay are fair and liberal, for the following reasons:

1. Railway employees are as well paid as labor in other employments.

2. Enginemen are the highest paid class of employees in railway service.

3. Existing wage differentials, growing out of wage adjustment of 1910, correspond with differentials theretofore existing.

4. The 1910 adjustment of enginemen's wages was made subsequent to the adjustment of wages of conductors and trainmen.

5. The differential between enginemen and conductors is as wide as is warranted by the character of service.

6. Conditions of service were given consideration in the 1910 adjustment.

7. Since the last adjustment, there has been no increase in physical labor, responsibilities, or risks, on account of change in

   (a) Size of engines,
   (b) Speed of trains,
   (c) The loading of trains,
   (d) Block signals,
   (e) Physical requirements,
   (f) Discipline.

8. The vitality and working period of the engineman compares favorably with that of workers in other employments.

9. The physical labor, risks, and responsibilities in general are not such as to justify an increase in wages.

10. The engineman has been fully compensated for any increase in the productive power of his labor, incident to modern methods and facilities, in the creation of which he did not participate.

11. The engineman is not entitled to an increase in rates of pay

because of personal necessities; that is, because of increased cost of living.

12. Generally.

The rules of service, for purposes of discussion, may be classified as follows:

1. Beginning and ending of day.
2. Initial terminal delay.
3. Final terminal delay.
4. Time held away from home terminal.
5. Amendment of Section E of the rules relating to the application of the sixteen-hour law.

The railway companies object to the proposed rules, for the following general reasons:

(a) The rules relate to matters that are incapable of standardization, owing to differences in local conditions. As, for instance, a diversity of rules is necessary in order to meet local situations, depending upon the facilities incident to the delivery of the engine to the engine crew at the starting point, and incident to the delivery of the engine by the crew to the hostler or the roundhouse employees at terminal points, the practice being different on different roads.

(b) Existing rules, although varying in their nature, in a measure, take care of the differences in local conditions, except where rules have been adopted as a result of barter for the purpose of increasing the aggregate compensation of employees rather than for the purpose of meeting local conditions.

(c) Existing rules are largely a matter of barter, in which the enginemen may have secured the adoption of a certain rule as a substitute for an increase in the rates of pay, which consequently should not be used as a precedent even on roads where the conditions are similar, unless due consideration is given to existing rates of pay and the effect such rules may have upon aggregate compensation.

(d) Proposed rules require the payment of double time, notwithstanding the hours of labor and the responsibilities of the enginemen are not increased.

(e) Will require the railway companies to pay for time and service which they do not receive.

(f) Will penalize the railway companies in periods of depressions when the interests of enginemen require distribution of runs on a basis giving each engineman his proportionate share of the total runs.

(g) Penalizes the railway companies in matters affecting the opportunity of service of the enginemen over which the railways have no control.

ELECTRIC SERVICE.

The demands of the enginemen are that enginemen shall have the right to operate electric power at the prevailing steam rate and under existing rules of service; which right and rates and rules shall exist and be observed not only by the railway companies that are parties to this proceeding, but by all railway companies having trackage rights over the former railway company's line.

The railways object to these demands for the following reasons:

(1) No sound reason why the railways should be limited in the selection of operators, for electric locomotives or multiple unit trains, to the ranks of enginemen since there are other classes of employees equally equipped and available. Such limitation would tend to monopoly, which is contrary to public policy.

(2) Operation of electric locomotives and multiple unit trains calls for essentially different service than the operation of steam locomotives, and has numerous advantages over steam service; these advantages have been recognized by a committee of employees of the Pennsylvania, fixing 180 miles as a day's work on multiple unit trains, as compared with 100 miles in steam service.

(3) Existing rates and rules on the New Haven and the New York Central are the result of an agreement which expressly provides that they shall apply to the transitional stage only existing on those roads, and that when the electrification zone is completed an adjustment of wages and mileage will be made.

(4) The adoption of the demand would require a breach of existing contracts and obligate the railways to make contracts binding upon their respective successors in operation, thereby relieving the B. of L. E. of dealing direct with the operating company.

COLLATERAL EFFECT.

The railway companies call attention to the fact that the proposed increase in wages would increase the pay of the enginemen approximately $7,172,545, or 17.71 per cent., which is equivalent to placing a lien of approximately $143,400,000 5 per cent. bonds, having a preference over existing mortgage bonds. A similar increase of wages to other classes of railway employees, in order to maintain the existing wage adjustment among all classes, will increase the wages of employees annually approximately $67,000,000, which is equivalent to placing a lien of approximately $1,340,000,000 of 5 per cent. bonds, having a preference over existing mortgage bonds. This is equivalent to increasing the capitalization of the railways approximately 43 per cent.

FINANCIAL SITUATION.

The effect of granting the demands of the enginemen and the collateral results necessarily following, as indicated above, will wipe out the surplus of all of the railways and cause the bankruptcy of other roads; seriousy affecting the credit of the railways; impairing their ability to make improvements demanded by the public and necessary in order to increase the efficiency of the service, and to insure greater safety to the public and the employees; ultimately resulting in the destruction of the transportation machine unless the public assumes the burden by permitting an increase in freight rates; which means that practically all increases in wages of railway employees must be paid ultimately by those whose average annual wage is under $700 as ascertained by the United States Census Bureau.

RAILWAY ACCOUNTING, MENTAL AND MECHANICAL.*

I.

BY J. S. DONALDSON,
Assistant Comptroller, Pennsylvania Railroad.

Investigation of methods in force among the leading railways of our own and foreign countries, do not disclose any development on lines as broad as those obtaining in the United States. In Europe, for the most part, no mechanical devices, outside of duplicating processes and typewriters, are in use.

It is not my purpose to dwell on the relegation of the copying press and its adjuncts to the scrap heap by the substitution of carbons in books, or on the use of numerous mechanical devices generally well known such as pencils, pens, erasers, fasteners, loose leaf binders, card filing and similar devices; nor the use of typewriters in correspondence and like work; and of duplicating devices of the metal styles and of the gelatine, carbon and wax paper kind, or of chemically prepared paper which requires no carbon paper to produce copies; duplicating by photographic processes and the electric pen; devices for folding letters, sealing and stamping envelopes; devices for protecting, perforating, stamping, numbering and cancelling checks and other financial paper, tickets, etc.; devices for addressing envelopes, letters, etc., or preparing lists of addresses and dividend checks; waybill binders; devices for phonographic reproduction of letter dictation, including those for the recording of telegraphic and other conversations and telegraphic communications; cash registers,

*Abstract of a paper read before the Association of American Railway Accounting Officers, at Quebec, June 26, 1912.

coin wrappers and money changers; ticket accounting machines, punches, duplex and ticket holders and cases and receptacles; time clocks; paper cutters, ticket destroyers; signographs for making several original signatures by one pen motion, and numbering machines.

[Mr. Donaldson here sketched the development of the use of typewriters in accounting and in way billing, and of adding and listing machines, of which many different styles have been tried. In this connection he emphasized the need of instructing the operators with care, and always requiring a good quality of work. Continuing he said:

Printed slide rules and tables, with determined percentage, multiplied and other results, are, in their fields of use, which however are limited, of great assistance, especially where volume is not a desideratum and quickness in location of the exhibited results makes them in some cases superior to machine operation.

The disk device for ascertaining trainload weights enables trainmasters to ascertain this information quickly.

Listing machines will run 2,000 checks of small amounts in an hour; crank movement machines 120 to 200 and more multiplications or divisions, and the key non-listing machines and slide rules and printed tables a higher number, ranging from 300 to 400, but without the same assurance in results as the crank machines, if the work is original.

About 1889 patents were obtained for the electric tabulating machines, and their introduction into railway work took place in the New York Central freight accounting department in 1895, by understanding with the Pennsylvania that the New York Central would develop it, while the Pennsylvania would develop the use of typewriters in the waybilling of freight. The first attempts in the use of the tabulating machines were unsatisfactory, but later developments put them into practical and successful operation. The Long Island, as part of the Pennsylvania system, began their use in freight accounting in August, 1903, and the Pennsylvania proper in March, 1904, and many other roads have since adopted them.

[Mr. Donaldson here gave a description of the Hollerith tabulating machines. A card the size of a postal card, punched with holes, is the record of a statistical item, as for example a line from a waybill or the mileage of a trip of a locomotive. The meaning of a hole depends on its location on the card. Machines for punching. assorting and adding up the cards constitute the Hollerith system. With a sufficiently large volume of business the system saves a great amount of time; and reclassification of items is so easy and simple that the statistician may make all sorts of studies which under the usual methods would not be attempted because of their cost.]

The introduction of the tabulating machines of necessity requires the adoption of the "unit" system and the "numerical" system. Much has been said of the possibility of loss of records under the "unit" system, which provides for the use of cards, but when consideration is given to the fact that the entire banking, postal and railway passenger ticket systems are conducted on the transmission and handling of "units," with much more liability to loss, it is not a well founded fear; while we further know that the filing of bond coupons. dividend checks, vouchers, etc., is the best evidence in the preservation which can be given to loose records, making them as reliable as any bound books.

The Pennsylvania Railroad Company began the use of the electric tabulating machines, as previously stated, in March, 1904, in the auditing of its merchandise freight receipts. The methods first employed were on the lines of endeavoring to make the machine fit the methods or system of accounting then in force, but this proved to be the wrong procedure, and steps were taken to make the methods conform to the machine. For this reason the entering of "Daily Forwarded Reports," and then checking the "Received Reports" against such entries was abandoned, and the making of records on cards from a "Daily Received Report" was adopted, because the date of waybills made, enabled the sort of the cards to be made to check a forwarded report, while it would not be so easy to know, if a card were punched from a forward desk report, on what daily received report it would check, nor would the result be as final as when the transportation is completed.

The preparation of earnings on a received basis followed for this reason and because of the saving in copies of waybills sent to auditing department, which saving is further augmented by the forwarding agent using his shipping order with notations in lieu of a file copy of the waybill; and also because it represents service performed and completed, for which the expense of movement is also contracted and expended, and eliminates from the balance sheet at the close of a month or year an asset which under the forwarded basis does not exist, as the amount due by "agents and conductors" is uncollectible and unearned until the transportation service is completed.

Junction net settlement by the improved style by treasurer's draft, combining all points of interchange with a road, with more prompt settlement than under audit office plan, must also supersede audit office settlement, to conduct it on the machines and in order that proper supervision may be had by each company of the audit of its own accounts. The accuracy and control of the audit can be no stronger than that of the weakest participant, and these are contingent on the condition and promptness with which the audit takes place.

With junction settlement also there are fewer movements to prorate, consequently fewer summaries and more increased efficiency. A close study of the average of shipments between two points is better understood when a road with 1,500 stations extends audit office through billing to a road with 1,500 stations, as against its 1,500 stations to a few junction points. Entry sheets are multiplied many fold and the number of summaries, etc., consequently increased.

Through billing by either junction or audit office settlement is, so far as transportation and movement are concerned, precisely similar in action. Under our arrangements with the New York Central & Hudson River we have an interchange of daily reports of the agent of one carrier to serve the purposes of both.

This method of settlement also makes possible the preparation of earnings on a true received and actual basis within the company's own system in weekly periods, and also permits of the audit and statistical data being prepared uniformly and by one plan and on the tabulating machine, instead of working local by machine and interline by antiquated hand methods. Such a system eliminates a volume of correspondence, as the two agents at the junction can settle questions at issue by personal contact.

By the use of mechanical devices we are also enabled to prepare weekly statements of practically actual earnings two and one-half days after the period, and weekly statements of commodity tonnage, by many classes of freight, from all stations on the system, by territorial groups, within ten days after the transportation is completed, and actual earnings and statistics are prepared in less time and with a greater degree of accuracy.

Estimated and actual expenses by departments of accounts are, by the tabulating process, prepared for our entire system within two weeks after the close of a month.

The economy produced in accounting work by the use of mechanical and other devices (notwithstanding all that has been said and advertised to the contrary) has been, so far as the Pennsylvania is concerned, and I am sure it is true of other carriers to a greater or lesser extent, superior to that practiced in any other commercial field.

Successful and economical operation is promoted, on the Pennsylvania by official visits. not only to the accounting department offices, but also to the large freight and passenger agencies and all offices in which accounting is performed. Smaller agencies or offices, where the forces, on account of legal requirements or the small number employed, cannot be changed, are visited and reported on by representatives, whose reports receive personal attention. Before making these visits rosters are required to be

kept by each clerk in the office or agency, indicating for a full month each item of the work on which he is engaged and time required for its performance, as well as recording any other duties exacted at seasons or periods not covered by the month specified. The results have been that a quick reference is thus had to the details of the work of each individual, and a determination made at once as to what can be improved in method, or what unnecessary work eliminated.

The visits thus made are not based, as is too often the case, on a superficial observation at a distance, but involve personal contact and conversation with each and every employee who in any manner keeps records, quizzing them as to knowledge, observing the requirements of all departments made of agents, or others, to see if they can be better met by consolidation in the reports or records, and, in order to eliminate unnecessary work and statement making and inviting suggestions from every clerk in writing as to improvements; which are subsequently considered at periodical conferences of the officers and heads of departments. At these conferences the clerk is invited to be present and express his views, as well as have explained to him what he may not have known in connection with his ideas, their practicability or impracticability; defining the policies of the accounting department and its requirements, and encouraging the performance of accurate work.

Agents' and road clerks' meetings, at which the accounting department is represented, have also proved an effective means of imparting information and discussing methods. All this seems to tend toward getting results, because the authority is vested to order a change on the spot, instead of the method employed of having committees or representatives make reports, which often result in no intelligent action being had. Intelligent action is feasible only when one has personally observed the conditions and surroundings, obtaining full knowledge on the ground. After proper conclusions are reached, then representatives are instructed to see that the policies of the department and its regulations are enforced.

Examples of the practiced economies not generally known by the public are to be found in the care which is exercised in, and time devoted to considering, the preparation of forms and record blanks by committees who give these subjects special study as to the economical cut of the paper; printer's rule as against machine rule; quality of paper, to see that it is consistent with the usage and preservation to be had; quantity; printing on both sides; combination of forms so as to print a greater quantity by adopting the principle of printing several headings on the blank and X marking on the one which the exhibit covers; prohibiting the use of printed forms to make file copies, especially when the copy can be as well read by inserting one of the printed forms underneath the tissue copy; using non-evaporating ink wells; using pencils to one-half an inch by pencil holders; taking the lead from indelible pencil stubs and making first class indelible ink by the addition of water; making tablet paper from obsolete printed forms and also using discarded envelopes for memorandum purposes; using plain paper for letter writing between departments where the public do not receive the correspondence; re-using fasteners, pins, wrapping paper, twine, rubber bands; making carbon copies direct in tissue copy books and abandoning the use of copy presses, blotters, wringers, baths and rubber cloth; the establishment of a special room in the general office for duplicating forms or blanks where the operation is cheaper than by printing; seeing that typewriters and mechanical devices of all classes are economically used, by concentration to get constant service so that the investment is not idle, and that the devices are provided only after approval of a committee which is conversant with the various classes and makes, which keeps in touch with the necessities and sees that new equipment is not provided if a renewal of the old is the more economical, or makes advantageous temporary transfers between offices to keep the equipment continuously employed; periodical inspection of all stationery and blank supplies and mechanical devices on hand throughout the system, as well as the close scrutinizing of requisitions to see that overstocking does not take place, or more costly than standard stationery is not furnished or requested; centralizing the mailing of reports and letters in general office to reduce the number of envelopes and the postage to a minimum; mailing, without envelopes, reports and communications between offices, endorsement of the address being made on the paper or document itself; holding of staff conferences monthly, or oftener, to review suggestions and improvements in all these and other directions, as well as to eliminate any labor which it may be concluded is unnecessary; by changing methods.

No effort is made to practice false economy by creating a saving through the expenditure of more in labor cost than the material saving produced.

All perfunctory signatures are eliminated, many of which represented no valid evidence of supervision or analysis of the document signed.

The committee work named is a duty imposed in the last decade, and has, with other committee requirements, resulted in adding to official duties additional hours of duty, with the consequence that the economies practiced are not offset by a counter expense incurred in their production. The working pace of an accounting officer, as well as that of other railway officials, is far more rapid, and the duties more complex and multifarious than ever before, owing to constantly increasing exactions on the part of the public and the federal and state governments. These exactions require a close study of rules, regulations and classifications; preparation of reports and an unremitting watchfulness to prevent technical violations and insure observance of government requirements. They might properly now be classed as "accountants in law," in the same way that we speak of attorneys at law.

Much effort has been made to establish systems of filing correspondence by subject, name and number, on the principle of decimal numbering that eliminates the necessity for card or book indexing. Given either the subject or the name, the scientific assignment of the number by prefixes and suffixes enables reference to be had to the receptacle in which the papers are filed. The weakness in many card index systems is that errors in record or misfiling of card makes the finding or location of papers one of great difficulty. Under a direct progressive system of numbering, if given the subject or name only, location is extremely difficult.

(To be concluded.)

NEW RAILWAY IN ARABIA BEGUN.—After long delay, the work of extending the Hedschas Railway from Medina, Arabia, to Mecca has been begun.

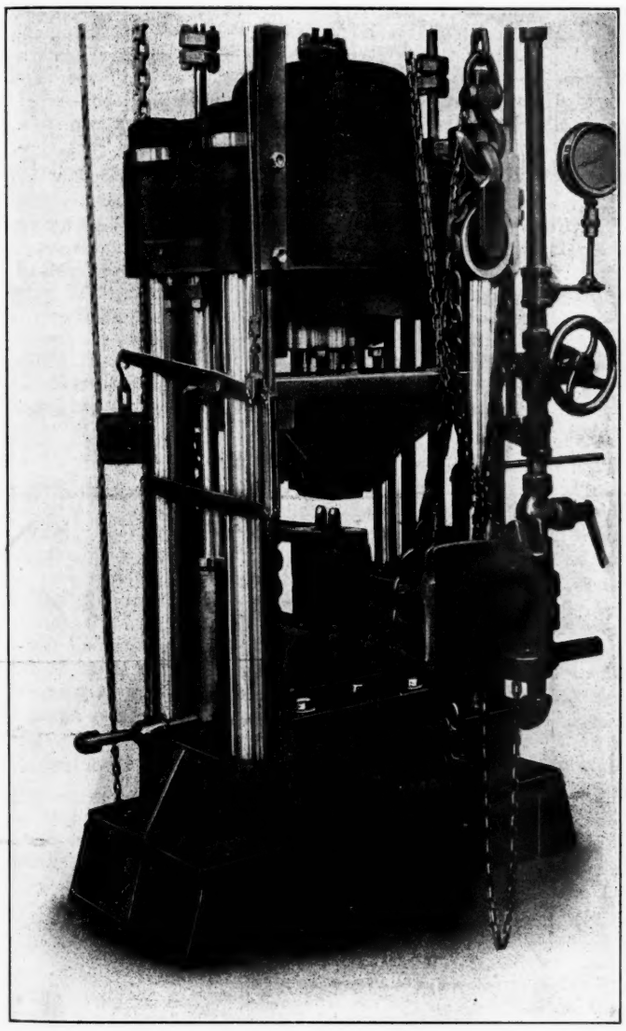
SIMPLON TUNNEL CONTRACT.—The contract for constructing the second-track in the Simplon tunnel was first let to a firm of German contractors. So much opposition was made to giving the work to foreigners that finally the authorities canceled the contract and decided to execute the work directly, without any general contractor.

FRENCH RAILWAY EARNINGS.—The French railways in the first half of 1912 all earned more than in the corresponding period of 1911; the state railways a little more than 1 per cent., the Northern 1⅝ per cent., the Eastern 2 per cent., the Southern 4 per cent., the Paris, Lyons & Mediterranean (nearly 6,000 miles), 5½ per cent., the Western 1 per cent., and the Orleans 6¼ per cent.

DRINKING ON NORWEGIAN TRAINS.—By a vote of 61 against 59 the Norwegian Storthing passed a law forbidding passengers to drink any beverages which they take into the trains with them, if they contain more than 2¼ per cent. alcohol. What testing apparatus will be used to determine the proportion of alcohol, and what chemists will do the testing, seem not to be provided for.

COUPLER YOKE SHEARING AND RIVETING PRESS.

The removing of broken couplers from the yokes and the riveting of the yokes to new couplers has proved a serious problem on most roads. It was formerly the practice to cut the heads of the rivets by hand, a laborious and slow process, which is still used in some places. Then came a period during which the car department officers and the mechanical engineers of the

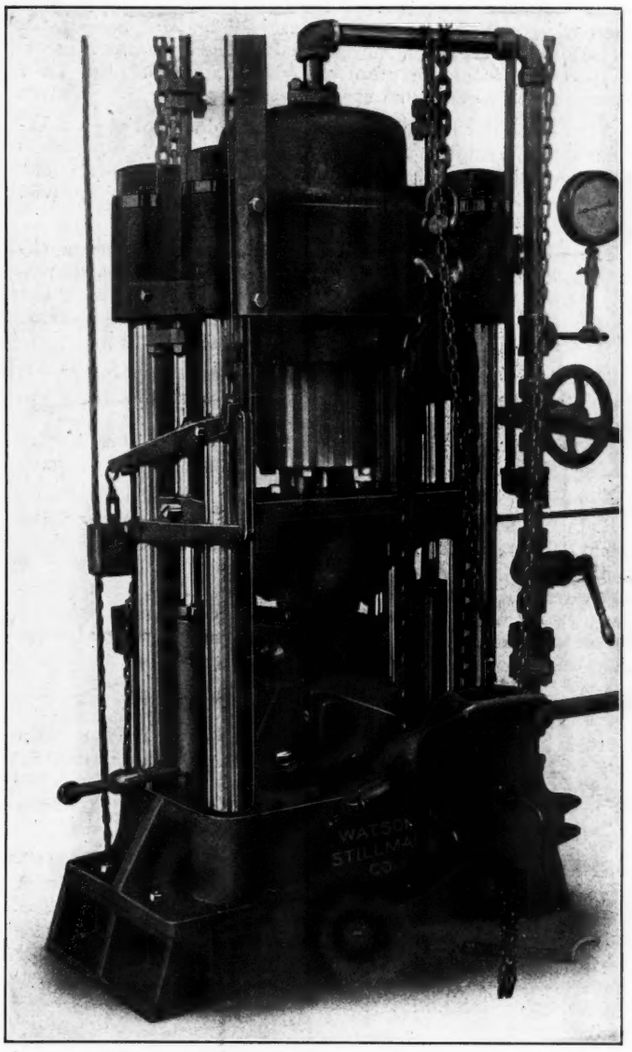


Coupler with the Yoke and Rivets in Position for Riveting.

railways focused their ingenuity on developing home-made devices for this purpose with varying degrees of success. In some cases drop machines were used, a heavy weight dropping on knives or blades which rested on the heads of the rivets and sheared them off. The greatest difficulty with these machines has been in maintaining the blades in good condition and in protecting the workman against flying parts. Other roads have developed air operated nippers or shears. The Lackawanna uses a hydraulic press for shearing off the rivets, and on at least one road the experiment has been tried of burning off the heads with the oxy-acetylene flame.

It has remained for the Watson-Stillman Company, New York, to design a substantial hydraulic press with attachments for not only shearing off the yokes from the damaged couplers, but also for riveting the yokes on couplers. The accompanying illustrations show how this is done. In shearing off the yoke, supporting blocks are used upon which the ends of the yoke rest, but which clear the coupler shank. As the ram descends the coupler shank is forced downward, as shown in one of the photographs. The bodies of the rivets drop out of the coupler shank and the ends and heads can easily be forced out of the yoke. This is a decided advantage over devices which cut off the heads at one end of the rivet only, for in such cases, if both of the rivets are not driven from the same side, it is impossible to drive one of them out. The other illustration shows the coupler, yoke and rivets in position for heading the rivets. The main ram and the clamping ram start downward simultaneously, the small ram first clamping the yoke to the coupler shank. The riveting die attached to the large ram then descends on the rivets and heads them. The work is done quickly and the operation of the press is so simple that the man in charge of it can give much of his time in helping to handle the yokes and couplers in and out of it.

This press will handle standard coupler shanks and yokes up to 5 in. x 7 in., and rivets up to 1¼ in. in diameter. It is built with heavily ribbed platens with plenty of room for placing and removing the work, two push-back rams for quickly and automatically returning the large ram, and a gage and valves in full



Position of Coupler and Yoke after the Shearing Operation is Completed.

view and easy control of the operator. The capacity is 200 tons; the height over-all is 6 ft. 8 in., and the floor space required is 1 ft. 10 in., by 4 ft. 3 in. The space between the tension rods is 2 ft. ¼ in. by 9¼ in.; the diameter of the ram is 12 in., and the stroke is 6 in. The clamping cylinders have 3 in. rams with 6½ in. stroke, and the push-back cylinders have 1¾-in. rams. The press weighs 7,858 lbs. complete.

General News Section.

The House of Representatives has passed a bill prescribing penalties for breaking seals on cars in interstate commerce.

One passenger was killed and several injured when an excursion train on the Cincinnati, Hamilton & Dayton was derailed by broken rail near Decatur, Ill., on August 25.

James J. Hill has accepted an invitation from a committee of prominent St. Paul citizens to attend a banquet in that city in honor of his seventy-fourth birthday on September 16. It is estimated that 1,200 will be served.

The telegraphers employed by the Michigan Central in Canada have had their pay advanced; and in some cases it is said that the increase amounts to $10 a month. Men using telephones in train despatching are to be classed and paid the same as telegraphers.

Six suits for violations of the safety appliance acts have been filed in the federal court at Indianapolis against the Grand Trunk Western, the Cleveland, Cincinnati, Chicago & St. Louis, Cincinnati, Bluffton & Chicago, and the Lake Shore & Michigan Southern.

A strike of the freight handlers on the docks of the Lackawanna, the Lehigh Valley and the Erie railways at Buffalo has been ended by the return of the men to their work at the old rates. Representatives of the men say that improved working conditions have been granted.

The Chicago, Indianapolis & Louisville last week ran a pay car for the first time in many years; and it is said that the reason for discontinuing the payment of employees by check is due to the discovery that some of the pay rolls had been found to be carrying the names of former employees now dead.

The Pennsylvania Railroad Company has ordered four car floats for use in New York harbor. Two of the floats will be built by the American Car & Foundry Company, one by the Perth Amboy Dry Dock Company, and another by Ira Bushey, Brooklyn, N. Y. All the floats are to be delivered within the next six months.

R. D. Parker, engineer of the Texas Railway commission, has submitted a report of an investigation of the physical condition of the Texas & Pacific, which recommends a large number of improvements, both in service and in plant, including new ballast, heavier rails on portions of the line, closer supervision by operating officers of train movement, better methods of track maintenance, and an increased amount of double track.

Suits have been filed by the government in the Commerce Court at Washington against the Central of New Jersey for granting a pass to an officer of the New York Transportation Company, and against the Erie for granting one to a traveling passenger agent of a steamship company. It is charged that neither of these companies is a common carrier and, therefore, that the granting of these passes by the railways is illegal.

Safety committees have been established by all of the railways operating in the state of Indiana, except the Grand Trunk and the New York, Chicago & St. Louis. This information is given in the last accident bulletin of the Indiana State Railway Commission, which body some months since sent a circular to the railways recommending the organization of these committees. Nine interurban roads are also named as having taken similar action.

The Chicago, Milwaukee & St. Paul moved 2,417,053 cubic yards of earth during the month of July, of which amount 2,135,053 cubic yards were moved by contract. This grading was principally done in connection with the construction of second track in Minnesota, South Dakota and Iowa and new terminal yards at Godfrey and Savanna, Ill., and does not include smaller items of grading done on other parts of the system in connection with the filling of bridges, etc.

Collingwood Schreiber, consulting engineer for the Canadian government, who has just made a trip of inspection over the Grand Trunk Pacific, says that the completion of the 480 miles of road now under construction between the eastern and western mountain sections is likely to be seriously retarded by strikes of the workmen. Persistent agitation has been carried on by the Industrial Workers of the World, and in July many hundred men left their jobs and went to the coast cities.

At a meeting on August 28 between the Conference Committee of Managers and the committee representing the Brotherhood of Locomotive Firemen and Enginemen on the Eastern railways, it was agreed that further consideration of the firemen's wage request be held in abeyance until the decision of the Arbitration Committee regarding the enginemen's demands. When the arbitrators have announced their decision, the conference with the firemen and railway representatives will be promptly resumed, and continued to a conclusion.

The Chicago Great Western has issued a circular to employees asking for sympathy and protection for members of extra gangs employed on maintenance of way work who do not understand the English language and the customs of the country. "If you are employed in their midst as an official, foreman or laborer," the circular says in part, "and can read English, you should consider yourself fortunate, and use your superior intelligence in trying to avoid personal injury to the less fortunate about you. In other words, help these men to learn, by setting a good example."

The Southern Pacific has installed a lunch counter car on a train running from San Francisco to Los Angeles. The counter extends the length of the car along one side, with the regulation lunch-counter stools in front of the counter. Meals will be served at all hours. Those newspapers which report this as the first lunch counter car ever run in America should look up their history. The Philadelphia, Wilmington & Baltimore ran two such cars between Baltimore and Philadelphia for about three years, 1863-66, as reported in the *Railroad Gazette* of December 19, 1884. The "eating bar" was about 25 ft. long, the car, 50 ft. long, being divided by a transverse partition in the middle, and half of it being used as a smoking car.

Large Refrigerator Car Order of Pacific Fruit Express.

One thousand new refrigerator cars, equipped with collapsible tanks with a capacity of 11,000 lbs. of ice, will soon be delivered to the Pacific Fruit Express Company, a subsidiary of the Southern Pacific Company. The collapsible tanks will enable the company to use the cars for ordinary freight during the periods that they are not required for perishables. The first instalment of these new cars will be started westward within another month, and they will immediately go into service. This order of 1,000 new cars is an increase of 10 per cent. in the total refrigerator equipment of this company, making it 11,000 cars. The latest refrigeration ideas have been adopted in the building of the cars and a most effective insulation will line the interiors. Five years ago the Pacific Fruit Express Company had 6,600 of these cars, but the growing fruit and produce business of California, Oregon, Washington, Idaho and other Pacific coast states has caused nearly a thousand additional cars to be purchased annually. The equipment of this character, owned by the Pacific Fruit Express Company, represents an outlay of more than $15,000,000. This new order will total nearly a million and a half dollars, the cars costing approximately $1,400 each.

Chicago & Eastern Illinois to Test an Automatic Stop.

The Chicago & Eastern Illinois has arranged for a comprehensive service test of the Miller automatic train control system, which will be installed on its Southern Illinois line from Villa Grove to Salem, Ill., a distance of 107 miles, and on all engines passing over that line. This will mean from 100 to 125 locomotives. From Villa Grove to Findlay Junction, 40 miles, the line is being equipped with automatic block signals.

The railway company made a test of this stop device near Hoopeston, Ill., last October, with two locomotives equipped, and

the results, while not complete or conclusive, were such as to warrant a more complete test under all sorts of operating conditions. The device is controlled by the Miller Train Control Corporation. A contact shoe attached to the right-hand side of the engine and hung about 16 in. outside the gage line and with its lower end about 3 in. above the top of the rail, strikes a ramp, about 150 ft. long, supported on the ties and located at braking distance back of the stop signal at the entrance of each block section. When the block section is occupied (or the track relay for any reason is de-energized) the stopping apparatus acts. The ramp is so formed that the first half of its length is a rising incline, and the second half a descending incline. The shoe, as it strikes and runs along the ramp, is raised vertically about 3 in., and unless prevented by the electrical controlling device, the shoe stem will operate a system of cranks closing the throttle and applying the air brake. The throttle closing is done by means of an air cylinder, and the brakes are applied by means of a valve in the train line, which is designed to be adjustable for either an emergency or a service stop. The electro-magnetic controlling device is actuated by a circuit governed by the signal or track circuit of the block section which the automatic stop is designed to protect. An auxiliary ramp, located about 500 ft. ahead of each signal, is provided for stopping a train in case the signal fails to go to the stop position after having been passed by a train. All parts of the apparatus are arranged on the "closed circuit principle," with a view to insuring that the failure of any essential part shall cause an application of the brakes. The engineman is able to release the brakes at any time after they have been automatically applied.

Comparison of Car Service Operations.

A comparative statement of cars handled by 21 car service associations and demurrage bureaus for the month of June and the six months ending June, 1910-1912, is made by the department of commerce and labor as follows:

Names of Associations and Bureaus.	Month of June.			Six Months Ending June.		
	1910. Cars.	1911. Cars.	1912. Cars.	1910. Cars.	1911. Cars.	1912. Cars.
Alabama Demurrage & Storage Bureau	64,295	57,247	74,732	406,525	389,286	493,360
Central (St. Louis) Demurrage & Storage Bureau	87,886	73,792	72,004	534,416	450,205	428,995
Chicago Demurrage Bureau	255,101	220,922	101,095	1,554,974	1,296,310	560,434
Colorado Car Service Association	32,680	29,110	34,010	221,260	190,590	227,980
East Tennessee Demurrage & Storage Bureau	30,271	32,185	32,485	185,206	179,679	194,396
Illinois & Iowa Demurrage Bureau	275,238	212,227	184,589	1,712,061	1,500,224	1,143,468
Intermountain Demurrage Bureau	15,217	18,195	22,747	98,399	99,079	132,407
Lake Superior Demurrage Bureau	28,281	25,166	19,205	181,456	161,786	186,772
Louisville Car Service Association	54,736	46,814	44,640	332,462	317,220	300,784
Missouri Valley & Storage Bureau	164,240	148,462	127,053	977,921	878,869	876,337
Montana Demurrage Co.	39,094	35,108	29,951	239,567	148,153	219,620
North Carolina Car Service Association	36,973	38,381	32,584	248,125	271,833	267,117
Northern Demurrage Bureau	134,337	110,796	86,807	833,188	735,293	636,493
Pacific Car Service Bureau	138,121	135,842	139,280	732,449	743,160	781,033
Pacific Northwest Demurrage Bureau	106,720	101,204	94,459	541,985	566,714	534,490
Southeastern Demurrage Bureau	70,787	70,397	75,046	513,195	564,709	562,767
Tennessee Demurrage & Storage Bureau	26,685	30,490	29,293	180,406	185,975	189,381
Texas Car Demurrage & Storage Bureau	88,966	79,215	73,918	563,493	502,290	519,464
Virginia & West Virginia Demurrage Bureau	84,346	93,738	96,080	508,890	565,417	550,762
Western (Omaha) Demurrage Bureau	64,633	85,560	74,989	420,333	478,701	463,443
Wisconsin Demurrage Bureau	83,766	83,566	93,300	503,054	501,277	537,898
Total reported by 21 associations and bureaus	1,882,373	1,728,417	1,538,267	11,489,365	10,726,770	9,807,401

The Panama Canal Law.

The Panama Canal bill, as finally passed by both Houses of Congress, was signed by President Taft last Saturday night. As passed, it retains the provision allowing American vessels in the coastwise trade to pass through the canal without payment of tolls; and also, by an amendment to section 5 of the Interstate Commerce law, it forbids the use of the canal by vessels owned or controlled by American railways. This also applies to all other waters, except that, in any given case, the Interstate Commerce Commission may decide that the control of the railway does not prevent competition. The language of the bill is such, however, that this clause giving power to the commission apparently will have no practical effect, and it is the general understanding that railways engaged in interstate commerce, owning an interest in water transportation companies *anywhere*, which if otherwise owned might compete with the railway, or which, being owned by the railway tend to reduce competition between vessels, will be required to divest themselves of such ownership by July 1, 1914. The Interstate Commerce Commission cannot give the railway permission to operate vessels beyond July 1, 1914, unless it be convinced that the service is being operated in the interest of the public and is of advantage to commerce, and does not exclude, prevent or reduce competition on the water route under consideration. This provision applies everywhere throughout the United States so that it affects vessels on Long Island Sound, on the Great Lakes, on Chesapeake and Delaware bays, on the Gulf of Mexico and on the Pacific Ocean.

President Taft, in signing the bill, sent to Congress a memorandum declaring that he gave his approval because of the necessity of at once providing for the operation of the canal, notwithstanding his objection to certain clauses. He holds that the granting of free passage to American ships in the coastwise trade is not a violation of the spirit of the existing treaty between this country and England, because to construe the treaty in any other way would be the same as saying that the United States government had given up its right to control its own commerce in its own way. All other nations will have the right to aid their commerce in any way they may see fit, and it cannot be supposed that in adopting the treaty this government intended to allow other nations this right while restricting its own liberty in the same matter.

The president says that the exemption of our own vessels in the coastwise trade from payment of tolls is justified on the same ground that has justified the government in subsidizing transcontinental railways. He approves the prohibition of railway ownership of steamships on the ground that a railway can use a water line unfairly. He says:

"The difficulty is that the interest of the railway company is so much larger in its railway and in the maintenance of its railway rates than in making a profit out of the steamship line that it can afford temporarily to run its vessels for nearly nothing in order to drive out of business independent steamship lines and thus obtain complete control of the shipping in the trade through the canal and regulate the rates according to the interest of the railway company. Jurisdiction is conferred on the Interstate Commerce Commission finally to determine the question of fact as to the competition or possibility of competition of the water carrier with the railway, and this may be done in advance of any investment of capital."

Referring to the clause forbidding the use of the canal by steamships owned by a violator of the anti-trust law, the president observes that this cannot come into effect until a

decree of the court shall have established the guilt of the owner of the vessel.

The law also contains a long amendment to section 6 of the Interstate Commerce law, increasing the authority of the commission over rail-and-water routes everywhere. The commission may order physical connection between a railway and a steamboat dock, and prescribe through routes and rates, and proportions of through rates.

An officer of the Pacific Mail Steamship Company, which is controlled by Southern Pacific Railway interests, is quoted as saying that the company has decided not to build the four steamships, for service between New York and Asiatic ports, for which contracts had been drawn up and which were to be built at Philadelphia and Newport News.

The law permits foreign-built ships owned by Americans henceforth to have American registry, if to be used only in foreign trade, and if not over five years old. This reverses the policy of a hundred years.

Post Office Appropriations; A Parcel Post Next Year.

The Post Office appropriation bill, as passed by Congress last week, provides that, beginning January 1, 1913, parcels shall be carried in the United States mails at rates ranging from 5 cents a pound, for short distance, up to 12 cents where the carriage is over 1,800 miles. The limit of weight of packages is 11 lbs.; and of size the limit is 72 in. in length and girth combined. Articles perishable within the time reasonably required for transportation will not be accepted. The rates are based on distance. The arrangement is called a zone system, and there are eight "zones" but these eight zones are not fixed; they are defined in relation to each individual starting point. The country is to be divided into units of area 30 minutes square, being a quarter of the area formed by the intersecting parallels of latitude and meridians of longitude. The first zone includes all territory within a radius of approximately 50 miles, measuring from the center of a unit; the second zone is all outside of the first and within 150 miles; the third is the additional territory within 300 miles; the fourth within 600 miles, the fifth 1,000 miles, the sixth 1,400 miles, the seventh 1,800 miles, and the eighth all greater distances. The rates are as follows:

	First pound.	Each add'l pound.	Eleven pounds.
Rural routes and city delivery	$ .05	$ .01	$ .15
50-mile zone	.05	.03	.35
150-mile zone	.06	.04	.46
300-mile zone	.07	.05	.57
600-mile zone	.08	.06	.68
1,000-mile zone	.09	.07	.79
1,400-mile zone	.10	.09	1.00
1,800-mile zone	.11	.10	1.11
Over 1,800 miles	.12	.12	1.32

Distinctive postage stamps are to be used. The postmaster general may arrange for collection of charges on delivery and for collection of the value of the goods from the consignee, fixing the charges for this additional service. Also, with the consent of the Interstate Commerce Commission, after investigation he may revise the zones, classifications, weight limits and rates, if it is found by experience that the rates are unreasonably high or if they are not high enough to cover the cost of the service. He may readjust the compensation of star-route and screen-wagon contractors if the parcel post system materially increases their burdens. The bill includes an appropriation of $25,000 to enable six members of Congress to further investigate the parcel post and all related subjects.

The bill also provides for a joint committee of Congress to investigate and report on the whole question of second class postage and the compensation of the railways for carrying the mails; and the department is forbidden to extend or enlarge the present practice of sending second class mail by freight trains. A proposition to change the rates on second class matter was rejected. There was a contest in the discussion over the appropriations for railway transportation in relation to payments for carrying mail across the river between St. Louis and East St. Louis, determined efforts being made to reduce the rate; but finally the postmaster general was given discretion to use $35,000 for special services in connection with this transportation. Provision was also made for adjusting the payment to railways which had to carry unusual quantities of mail because of the floods in the Mississippi valley last spring. The provision in regard to steel mail cars requires all full post office cars to be of steel, or something equally indestructible, after July 1, 1917. After July 1, 1913, each road must replace 25 per cent. of its wooden cars each year, and all new cars from now on must be of steel. The postmaster general is authorized to pay for full cars used prior to March 1, 1912, provided he is satisfied that the railway made reasonable effort to comply with the requirements of the law then in force.

The appropriation for railway postal clerks includes $130,000 for compensation to men injured and to widows of those killed.

The Post Office appropriation also includes an item of $25,000 for an investigation into the subject of federal aid in the construction of post roads, and one of $500,000 to be expended by the secretary of agriculture and the postmaster general, in improving the condition of roads over which rural delivery is, or may hereafter be, established. This money is to be expended in conjunction with appropriations by states, counties or towns, which local authorities must expend twice as much as is spent by the federal government on any particular work.

Grain Dealers Urged to Assist Car Movement.

W. A. Garrett, chairman of the Chicago General Managers' Association, addressed the presidents and secretaries of the Grain Dealers' Associations of the middle west at the Union League Club, Chicago, on Monday, August 26, on the subject of the car situation, dwelling especially on the need for the utmost co-operation on the part of the grain shippers with the railways to obtain the greatest possible efficiency of car equipment. Mr. Garrett presented figures showing the existing situation and the amount of equipment ordered by the railways, which this year has exceeded proportionately the amount ordered in any year since 1906, and discussed the efforts of the presidents of the granger lines to get the Illinois railway commission to provide sufficient grain inspectors and samplers to secure samples from all cars arriving in Chicago in time to have the cars inspected and reported upon by 11 a. m. each day, which would save 24 hours unnecessary delay to many hundreds of cars. He also explained many ways in which shippers can assist materially in the handling of cars.

"With the demand for equipment," said Mr. Garrett, "no carrier desires to earn demurrage on freight cars in Chicago or any other terminal, for the demurrage charge does not pay the interest on the ground value and track maintenance in Chicago. Rather, they are anxious to get the cars unloaded so that they may get an outbound load to the country and another inbound load to the city. Many shippers do not seem to be impressed with the fact that cars are provided for transportation and not for storage. Even with the free time allowed at Chicago for the release of equipment the Chicago grain records for the months of September, October and November, 1911, recorded the fact that 5.45 per cent. of all cars inspected during that period were delayed beyond the free time and earned demurrage. The railways by working closely with the Chicago Board of Trade during the next six months hope to avoid much unnecessary detention in Chicago."

President Ripley Replies to Chairman Mayfield.

The Texas Commercial Secretaries and Business Men's Association has given out a statement by President E. P. Ripley of the Santa Fe system in reply to an interview by Chairman Mayfield of the Texas railway commission in reply to Mr. Ripley's statement before the Texas Welfare Commission, which was published in part in the *Railway Age Gazette* on May 24, page 1151. The association says in this connection that "the policy of discrediting the views of railway financiers so assiduously followed by the railway commission has brought about friction between the railway commission and railway builders, and the commissioners' custom of casting aside well-established rules of business and substituting their own theories has lost them the confidence of the investing public. As a result, the commission now finds itself unable to cope with the larger problems of the department and as a consequence railway construction is minimized, the movement of traffic demoralized and development stagnated. Thus an important branch of government

which, if skillfully managed, would become a power of progress, is compelled to confine its work to filing lawsuits against railways, entering into academic discussions before debating societies and giving out newspaper interviews."

Mr. Ripley's statement is in part as follows:

"In my original statement to the Welfare Commission I said, in effect, that my knowledge of the Santa Fe property in Texas did not extend back of a period sixteen years ago; that if the railway were over-capitalized at that time it was the fault of the people of Texas, as the result of financial methods approved by the state, carried on under its laws and auspices. Mr. Mayfield says that this statement is not warranted because of certain laws which he says existed, but were not enforced.

"I shall not argue this question, because it does not seem important. The capitalization of the Gulf, Colorado & Santa Fe was, in my opinion, no greater than was necessary in order to get the railway built—in other words, the prospective rewards were not larger than were necessary to get the money, and doubtless the same might have been said of all the other early roads of the state.

"Mr. Mayfield again says that the 'system has devoted its earnings to permanent improvements, reporting same to the railway commission as operating expenses.' This statement is erroneous. The books have been kept openly and in accordance with the rules laid down by the Interstate Commerce Commission, and they are open to the inspection of Mr. Mayfield or any one delegated by him.

"Again Mr. Mayfield says that the Texas property has suffered from the ownership and manipulation of the Atchison, Topeka & Santa Fe. This is a pet theory of the Texas commission and has been advanced covertly or openly in many of its reports. On various occasions during the last ten years we have denied the statement absolutely, and have called upon the commission to prove it, offering every facility to enable it to get at the facts.

"Mr. Mayfield tacitly concedes that railways are sandbagged in Texas by the damage claim industry, but says the railways transfer the cost thereof to the people, which somehow seems to him to mitigate the wrong. But I have observed on his part, or that of his colleagues, no disposition to make any allowances to the roads on this account—or, indeed, on any other. It may very likely be that some lawyer defending a case may have made the statement that the expenses to which the railway is subjected by the ambulance chaser and the sympathetic juror must eventually come out of the people, and theoretically this is true, but at present the railways bear it all.

"Mr. Mayfield goes on to say that notwithstanding my criticism of Texas laws it is significant that the Santa Fe has built more new mileage in Texas during the last four years than any other railway, and that the Texas laws and regulations have not interfered with its construction plans. And Mr. Mayfield draws from all this the conclusion that the Santa Fe's interests are not being disturbed under the Texas laws and regulations. As stated in my letter to the Welfare Commission, I had recommended certain construction in Texas in the hope that the state would perceive the injustice that it is doing to its railways and would retrace its steps as to certain restrictive laws and regulations. I based this hope on the fact that the legislature had for the last two sessions refrained from adding anything to the railways' burdens and on the hope that the commission would eventually see that the Texas railways could not stand present conditions. Also, I suppose it is unnecessary to state that most of the mileage we have built has not been constructed *because of* Texas laws, but *in spite of* them, and in order to complete a through east and west line in the formation of which Texas could not be avoided.

"I confess my inability to follow Mr. Mayfield's argument, or to find justification for the remark that 'legislation in Texas has reduced the cost of operating railways by lessening the hazard of employees and increasing the efficiency of the service.'

"Mr. Mayfield finds justification for the conditions in Texas by saying that some of its laws and regulations have been adopted in other states and should therefore be taken an an endorsement of the good of such measures. It is true that the new state of Oklahoma, being filled with a desire to 'swat' capital to the utmost, picked out of the state laws of Texas the most drastic regulations that could be found and incorporated them in its own constitution. The natural result has followed, and practically no construction has taken place in Oklahoma except that which had been previously financed and begun.

"Mr. Mayfield says that the attitude of Texas is not injurious or prejudiced, and that if it were true that railway construction were lacking it would be no proof that the laws were to blame, citing as an instance that in the state of Kansas during a period of twenty years there were no drastic laws or regulations, and there was no construction of new lines, due to the fact that railway building had been over-done. And he concludes that regardless of laws and regulations railway construction will continue to be carried on as the demands of the traffic require. From this it would appear that Mr. Mayfield is of the opinion that railway building in Texas has practically ceased because over-done. I do not agree with him, and I imagine there are many communities—and in fact whole counties—that will also differ with him and will share my opinion, viz., that railway building has ceased because in Texas it does not give promise of being a safe investment for capital."

International Rubber Conference.

It is planned to give considerable attention to railway requirements at the third International Rubber Conference, which is to be held in conjunction with the Rubber and Allied Trades Exposition at the New Grand Central Palace, New York, September 24-30, 1912. The tentative plans include a discussion of subjects of interest to the railways on the 26th and 27th. A number of railway engineers of tests and chemists have signified their intention of being present. Owing to the lack of a complete list of such officers, those in charge of the conference have been unable to extend individual invitations to all of these officers, and take this means of so doing. Dr. Frederic Dannerth of Passaic, N. J., the honorary secretary, will be glad to hear from any who expect to attend. Invitations have been extended to a number of associations to have delegates attend the conference, including the Master Mechanics' Association, the Master Car Builders' Association, the International Society for Testing Materials and the American Society of Mechanical Engineers. The two previous conferences were held abroad, and it is expected that the coming meeting will be largely attended by manufacturers of mechanical rubber goods from both at home and abroad, and also by the users of such materials.

Travelling Engineers' Association.

The twentieth annual convention of the Travelling Engineers' Association was opened on August 27 at the Sherman House, Chicago, by President W. C. Hayes, superintendent of locomotive operation of the Erie. The total registration showed an attendance of 950, of which 375 were members and guests of the association, and 300 were ladies. The opening address was delivered by Samuel O. Dunn, editor of the *Railway Age Gazette*, who spoke on the subject of "Efficiency of Railway Employees." Mr. Dunn drew attention to the continued decrease in net income of the railways and pointed out that practically the only method by which this tendency can be overcome is by the reduction of the cost of operation. This result demands an increase in the efficiency of operation, and he discussed the subject from the standpoint of the employees, the railway and the public, indicating the benefits to each that must result from closer attention and greater efforts toward increasing efficiency and economy. This address will be given in full in connection with the complete report of the convention in next week's issue.

Mr. Hayes, in his presidential address, briefly reviewed the history of the association, commented on its wonderful growth and pointed out the continually increasing importance of the position held by its members. He suggested subjects that should be considered at future meetings, and requested active participation on the part of all members in the work of this convention.

The first day's sessions were devoted to thorough discus-

sions of the value and effect of chemically treated waters on locomotive operation.

Wednesday's sessions were devoted to the consideration of mechanical appliances on locomotives which tend toward greater economy, viz., superheaters, brick arches, mechanical stokers, etc.

At the morning session on Wednesday, J. M. Daly, general superintendent of transportation of the Illinois Central, gave an address on the subject of "Tonnage Rating," and about an hour was devoted to answering questions from members and to a discussion on this subject. This paper will also be given in full in connection with the complete reports of the meeting.

At the afternoon session on Wednesday modern air brake equipment was considered.

On Thursday, papers dealing with the subject of inspection and work reports and methods of increasing the interest in the economical use of fuel and lubricants were presented and discussed. The feature of this day's session was the address of H. T. Bentley, assistant superintendent of motive power and machinery of the Chicago & North Western.

The exhibits were even more extensive and interesting than usual and attracted the interest of the members outside of meeting hours.

The following is a list of the exhibitors:

American Arch Company, New York. Represented by Le Grand Parish and F. G. Boomer.

American Locomotive Company, New York.—Photographs of latest types of locomotives. Represented by C. A. Delaney, W. J. Becker and T. Kennedy.

American Steel Foundries, Chicago.—Trucks, couplers and brake beams. Represented by J. D. Taylor, F. A. Lorenz, Jr., and W. G. Wallace.

Ashton Valve Company, Boston, Mass.—Locomotive safety valves, gages and gage specialties. Represented by J. F. Gettrust.

Barco Brass & Joint Company, Chicago.—Flexible joints. Represented by F. N. Bard.

S. F. Bowser & Co., Inc., Fort Wayne, Ind.—Self-measuring oil pumps and tanks. Represented by W. T. Simpson.

Chicago Car Heating Company, Chicago.—Locomotive reducing valve, steam hose couplers and end valves. Represented by G. E. Bucker, E. E. Smith, Geo. T. Cook and E. A. Schreber.

Chicago Pneumatic Tool Company, Chicago.—Full line of pneumatic tools and parts. Represented by John Campbell.

Commercial Acetylene Company, New York.—Headlights, flashing signals, engine marker and acetylene system. Represented by H. G. Doran.

Crane Company, Chicago.—Full line of valves, unions and joints. Represented by F. D. Fenn and G. S. Turner.

Dearborn Drug & Chemical Works, Chicago. Represented by R. F. Carr, J. D. Purcell, W. S. Reid, J. F. Roddy, C. S. Murray, A. W. Cooley, F. C. Fosdick, T. H. Price, I. H. Case, A. W. Crouch and Thos. Wooley.

Detroit Lubricator Co., Detroit, Mich.—Three-feed locomotive lubricator with single and double air cylinder lubricator with air cylinder attached; five-feed Detroit locomotive lubricator. Represented by A. D. Homard.

Dickerson Manufacturing Company, Clinton, Ill.—Water gages and water gage guards. Represented by F. Hinckley.

Dressel Railway Lamp Works, Boston, Mass.—Locomotive headlights. Represented by J. D. Hidgkins.

Emery Pneumatic Lubricator Company, St. Louis, Mo.—Cylinder lubricants, automatic device for lubricating air-brake equipment. Represented by N. J. McAloney.

Flannery Bolt Company, Pittsburgh, Pa.—Full line of Tate flexible staybolts; complete set of installation tools. Represented by T. R. Davis.

Franklin Railway Supply Company, Franklin, Pa. Represented by W. L. Allison, Jos. Sinkler and W. H. Coyle.

Galena Signal Oil Company, Franklin, Pa. Represented by W. E. Brumble, J. A. Graham, D. Eubank, W. J. Vance, J. S. Brown, W. E. Maher, G. E. McVickers, John Ferguson, J. Linneham, B. H. Stack, W. H. Taylor, M. M. Meham and C. Royal.

Garlock Packing Company, Palmyra, N. Y.—Full line of packing and packing materials. Represented by John P. Landreth.

H. G. Hammett, Troy, N. Y.—Trojan metallic packing; bell ringer and grinding compound. Represented by E. C. Sawyer.

Hobart-Allfree Company, Chicago.—Catalog drawings, etc., describing Allfree cylinders and valves for locomotives. Represented by W. H. England, E. H. Allfree and W. H. Belmaine.

Hunt-Spiller Manufacturing Corporation, Boston, Mass.—Cross head shoes, cylinder packing, eccentric and side rod bushings. Represented by J. G. Platt, V. W. Elliott and J. M. Moore.

Jacobs-Shupert U. S. Firebox Company, New York.—Moving pictures of Coatesville test. Represented by C. B. Moore, G. H. Pearsall, M. C. Beymer, H. W. Jacobs, A. Whiteford and E. Wilhelm.

Jenkins Bros., New York.—Valves and fittings. Represented by B. J. Nelley.

H. W. Johns-Manville Company, New York.—Throttle and air pump packing, rope and spiral packing; train pipe covering and expander rings. Represented by J. C. Younglove, P. C. Jacobs and D. L. Jennings.

Keystone Lubricating Company, Philadelphia, Pa.—Keystone journal box grease. Represented by W. E. Harrington and J. Mowery.

The Leslie Company, Lyndhurst, N. J.—Sectional valves and coupling nuts. Represented by J. J. Cizek and S. Ingalls Leslie.

Liberty Manufacturing Company, Pittsburgh, Pa.—Tube cleaners for arch tubes; air and water machines; steam specialties. Represented by H. A. Pastre and S. A. Bockius.

Locomotive Improvement Company, Clinton, Ia.—Markels removable driving box brass, flangeless shoes and wedges, lateral motion plates, solid-end main rods. Represented by Geo. L. Barker.

Locomotive Superheater Company, New York.—Model of superheater. Represented by G. L. Bourne, R. R. Porterfield, S. Hoffman, H. J. Bell, C. D. Hilferty, R. M. Ostermann, P. S. Robinson, G. E. Ryder, E. E. Spengler and W. W. Tawse.

Mason Regulator Company, Boston, Mass.—Section of Mason reducing valves. Represented by F. A. Morrison.

Manning, Maxwell & Moore, Inc., New York.—Hancock inspirators, boiler checks, Consolidated safety valves and other appliances. Represented by F. P. Smith, C. L. Brown and J. H. Bush.

McCord & Co., Chicago.—Model of force-feed lubricator. Represented by W. J. Schlacks and H. S. Whitehair.

Nathan Manufacturing Company, St. Louis, Mo.—1911 and 1912 boiler testers; lubricators with air end-attachments. Represented by J. S. Seeley, George Royal and A. S. Work.

National Boiler Washer Company, Chicago.—Photographs and drawings showing installations of the National boiler washing system. Represented by William White and H. A. Varney.

National Graphite Lubricator Company, Scranton, Pa.—Graphite lubricator for locomotive valves and cylinders; air compressors for locomotives using superheated steam. Represented by L. S. Waters.

National Tube Co., Pittsburgh, Pa.—Kewanee fittings and joints. Represented by W. F. Jones, A. M. Hobart, Francis Worcester, L. R. Phillips and W. W. Orrison.

New York Air Brake Company, New York.—Sections of air brakes and equipment. Represented by B. Pratt, George Kleifgers, Wm. Owen and L. W. Sawyer.

Ohio Injector Company, Chicago.—Three and five-feed lubricators, Ohio lifting injector and Chicago non-lifting injector and flange lubricator. Represented by F. W. Furry, Wm. F. Furry and F. W. Edwards.

Okadee Company, Chicago.—Blow-off cocks and automatic drain reflex gages. Represented by A. G. Hollingshead, W. Dangels and H. L. Winslow.

Parsons Engineering Company, Wilmington, Del.—Full size section of locomotive firebox equipped with Parsons system of combustion. Represented by W. H. Savery.

Permanent Manufacturers' Exhibit of Railway Supplies, Chicago.—Literature in relation to their exhibition. Represented by John Gill and W. N. Mitchell.

Pilliod Company, Swanton, Ohio.—Model of valve gear. Represented by R. H. Weatherly, F. E. Pilliod, F. A. Wilcoxen and R. F. Darby.

Pneumatic Jack Company, Louisville, Ky.—Pneumatic jacks. Represented by G. B. Maltby.

Pyle-National Electric Headlight Company, Chicago.—Headlight and generator. Represented by H. A. Bayley, E. B. Barris, R. L. Hilker, F. Pyle and J. W. Cleary.

Rabok Manufacturing Company, St. Louis, Mo.—Heat and rust resisting paints. Represented by T. A. Wray.

Railway Equipment and Publication Company, New York.—Copies of *The Pocket List of Railroad Officials.* Represented by Charles L. Dinsmore.

Railway List Company, Chicago. Represented by F. L. Wilson and F. W. Miller.

Ryan Galloway Company, Chicago.—Models of mechanical coal passers, slack adjusting drawbar and improved sand pipe. Represented by L. W. Galloway and Ed. Ryan.

Sargent Company, Chicago.—Water glass cocks, water glass protectors, reflex gages and blow-off valves. Represented by Geo. H. Sargent and F. G. Dunbar.

Wm. Sellers & Co., Philadelphia, Pa.—Self-acting non-lifting injectors, feed water strainers and stop valves. Represented by W. W. Storm .

Simmons-Boardman Publishing Company, New York.—*Railway Age Gazette, American Engineer* and *The Signal Engineer.* Represented by L. B. Sherman, J. N. Reynolds, F. H. Thompson, E. A. Averill and Kenneth G. Cloud.

Angus Sinclair Company, New York.—Copies of *Railway and Locomotive Engineering.* Represented by Allen G. Wood and Angus Sinclair.

Storrs-Mica Company, Owego, N. Y.—Mica chimneys and globes, Thompson hose clamps. Represented by C. P. Storrs and Tom Brown.

Clement F. Street, Schenectady, N. Y.—Drawings of locomotive stoker. Represented by Clement F. Street.

U. S. Metallic Packing Company, Philadelphia, Pa.—Metallic packings for steam locomotives. Represented by M. Brewster and Chas. Way,

Watson-Stillman Company, New York.—Chambers throttle valve. Represented by F. H. Clark.

Westinghouse Air Brake Company, Pittsburgh, Pa.—Quick-action indicators. Represented by E. Hartenstein, L. Wilcox and L. B. Hutchins.

International Association for Testing Materials.

The sixth congress of the International Association for Testing Materials will be held in the Engineering Societies' Building, 29 West Thirty-ninth street, New York City, September 2-7. Admission will be restricted to members of the International association and of the American society which is affiliated with it, and to duly appointed delegates from foreign countries and scientific bodies. The proceedings of the congress will be conducted in English, German, and French, with the aid of interpreters. About 700 foreign and 35 American papers and reports will be presented.

On Monday, September 2, the headquarters will be open all day for the registration of members. In the evening there will be an informal reception. On Tuesday morning the congress will convene at 10 o'clock. After addresses of welcome have been made, the various sections will then arrange for their sessions in their respective section rooms. The section sessions will convene at 2 p. m. and continue until 5 p. m.

In the evening there will be a reception by the officials of the city in the Public Library Building. On Wednesday, section sessions will take place from 10 to 12 a. m. The afternoon and early evening will be occupied by an excursion to West Point. On Thursday there will be section sessions beginning at 10 a. m. and 2 p. m. In the evening there will be a reception tendered to the foreign members by the American Society of Civil Engineers at 220 West Fifty-seventh street. On Friday, there will be section sessions in the morning and early afternoon, and an evening excursion down the harbor. On Saturday morning at 10 o'clock there will be a general session at which the sections will report, and resolutions upon their recommendations will be presented. The congress will adjourn at noon.

Chief Interchange Car Inspectors' and Car Foremen's Association.

The thirteenth annual convention of the Chief Interchange Car Inspectors' and Car Foremen's Association was held at the Palmer House, Chicago, August 27-29.

The following is a list of the exhibitors:

American Steel Foundries, Chicago—Models of simplex trucks, simplex coupler and brake beam, and literature describing other devices. Represented by W. C. Walsh, E. Walters and W. G. Wallace.

Grip Nut Company, Chicago—Grip nuts, monogram bolt fastening for safety appliance standards and single piece dust guards. Represented by E. R. Hibbard, W. E. Sharpe, W. G. Wilcoxson and Benjamin E. Klein.

Lehon Company, Chicago—Roofrite car roofing and insulating paper, waterproof canvas, etc. Represented by D. B. Wright.

McCord & Company, Chicago—McCord journal boxes and parts. Represented by W. J. Schlacks and H. E. Creer.

Westinghouse Air Brake Company, East Pittsburgh, Pa.—Instructive literature describing air brake equipment. Represented by L. M. Carlton.

MEETINGS AND CONVENTIONS.

The following list gives names of secretaries, dates of next or regular meetings, and places of meeting.

AIR BRAKE ASSOCIATION.—F. M. Nellis, 53 State St., Boston, Mass. Convention, May, 1913, St. Louis, Mo.

AMERICAN ASSOCIATION OF DEMURRAGE OFFICERS.—A. G. Thomason, Boston, Mass.

AMERICAN ASSOCIATION OF GENERAL PASSENGER AND TICKET AGENTS.—W. C. Hope, New York; next convention, September 12, Seattle, Wash.

AMERICAN ASSOCIATION OF FREIGHT AGENTS.—R. O. Wells, East St. Louis, Ill.

AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—W. C. Cooder, Carew building, Cincinnati, Ohio; 3d Friday of March and September.

AMERICAN ELECTRIC RAILWAY ASSOCIATION.—H. C. Donecker, 29 W. 39th St., New York. Convention, October 7-11, Chicago.

AMERICAN ELECTRICAL RAILWAY MANUFACTURERS' ASSOC.—George Keegan, 165 Broadway, New York. Meetings with Am. Elec. Ry. Assoc.

AMERICAN RAILWAY ASSOCIATION.—W. F. Allen, 75 Church St., New York; annual, November 20, 1912, Chicago.

AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, C. & N. W., Chicago. Convention, 3d week in Oct., Baltimore, Md.

AMERICAN RAILWAY ENGINEERING ASSOCIATION.—E. H. Fritch, 1011 S. Michigan Ave., Chicago. Convention, March 18-20, 1913, Chicago.

AMERICAN RAILWAY MASTER MECHANICS' ASSOC.—J. W. Taylor, Old Colony building, Chicago.

AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—M. H. Bray, N. Y. N. H. & H., New Haven, Conn.

AMERICAN SOCIETY FOR TESTING MATERIALS.—Prof. E. Marburg, University of Pennsylvania, Philadelphia, Pa.; annual, June, 1913.

AMERICAN SOCIETY OF CIVIL ENGINEERS.—C. W. Hunt, 220 W. 57th St., New York; 1st and 3d Wed., except June and August, New York.

AMERICAN SOCIETY OF ENGINEERING CONTRACTORS.—J. R. Wemlinger, 13 Park Row, New York; 2d Tuesday of each month, New York.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Calvin W. Rice, 29 W. 39th St., New York.

AMERICAN WOOD PRESERVERS' ASSOCIATION.—F. J. Angier, B. & O., Baltimore, Md. Convention 3d week in January, 1913, Chicago.

ASSOCIATION OF AMERICAN RAILWAY ACCOUNTING OFFICERS.—C. G. Phillips, 143 Dearborn St., Chicago.

ASSOCIATION OF RAILWAY CLAIM AGENTS.—J. R. McSherry, C. & E. I., Chicago.

ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—Jos. A. Andreucetti, C. & N. W. Ry., Chicago; annual, October 21-25, Chicago.

ASSOCIATION OF RAILWAY TELEGRAPH SUPERINTENDENTS.—P. W. Drew, 112 West Adams St., Chicago; annual, May 20, 1913, St. Louis, Mo.

ASSOCIATION OF TRANSPORTATION AND CAR ACCOUNTING OFFICERS.—G. P. Conard, 75 Church St., New York. Meeting Dec. 10-11, 1912, New Orleans, La.

CANADIAN RAILWAY CLUB.—James Powell, Grand Trunk Ry., Montreal, Que.; 2d Tuesday in month, except June, July and Aug., Montreal.

CANADIAN SOCIETY OF CIVIL ENGINEERS.—Clement H. McLeod, 413 Dorchester St., Montreal, Que.; Thursdays, Montreal.

CAR FOREMEN'S ASSOCIATION OF CHICAGO.—Aaron Kline, 841 North 50th Court, Chicago; 2d Monday in month, Chicago.

CENTRAL RAILWAY CLUB.—H. D. Vought, 95 Liberty St., New York; 2d Thurs. in Jan. and 2d Fri. in March, May, Sept., Nov., Buffalo, N. Y.

CIVIL ENGINEERS' SOCIETY OF ST. PAUL.—L. S. Pomeroy, Old State Capitol building, St. Paul, Minn.; 2d Monday, except June, July, August and September, St. Paul.

ENGINEERS' SOCIETY OF PENNSYLVANIA.—E. R. Dasher, Box 704, Harrisburg, Pa.; 1st Monday after 2d Saturday, Harrisburg, Pa.

ENGINEERS' SOCIETY OF WESTERN PENNSYLVANIA.—E. K. Hiles, 803 Fulton building, Pittsburgh; 1st and 3d Tuesday, Pittsburgh, Pa.

FREIGHT CLAIM ASSOCIATION.—Warren P. Taylor, Richmond, Va.

GENERAL SUPERINTENDENTS' ASSOCIATION OF CHICAGO.—E. S. Koller, 226 W. Adams St., Chicago; Wed. preceding 3d Thurs., Chicago.

INTERNATIONAL RAILWAY CONGRESS.—Executive Committee, 11, rue de Louvain, Brussels, Belgium. Convention, 1915, Berlin.

INTERNATIONAL RAILWAY FUEL ASSOCIATION.—C. G. Hall, 922 McCormick building, Chicago.

INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—L. H. Bryan, Brown Marx building, Birmingham, Ala.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.—A. L. Woodworth, Lima, Ohio.

MAINTENANCE OF WAY MASTER PAINTERS' ASSOCIATION OF THE UNITED STATES AND CANADA.—W. G. Wilson, Lehigh Valley, Easton, Pa. Convention, November 19-21, Chicago.

MASTER BOILER MAKERS' ASSOCIATION.—Harry D. Vought, 95 Liberty St., New York. Convention, May, 1913, Chicago.

MASTER CAR BUILDERS' ASSOCIATION.—J. W. Taylor, Old Colony building, Chicago.

MASTER CAR AND LOCOMOTIVE PAINTERS' ASSOC. OF U. S. AND CANADA.—A. P. Dane, B. & M., Reading, Mass. Convention, September 10-13, Denver, Col.

NATIONAL RAILWAY APPLIANCES ASSOC.—Bruce V. Crandall, 537 So. Dearborn St., Chicago. Meetings with Am. Ry. Eng. Assoc.

NEW ENGLAND RAILROAD CLUB.—G. H. Frazier, 10 Oliver St., Boston, Mass.; 2d Tuesday in month, except June, July, Aug. and Sept., Boston.

NEW YORK RAILROAD CLUB.—H. D. Vought, 95 Liberty St., New York; 3d Friday in month, except June, July and August, New York.

NORTHERN RAILROAD CLUB.—C. L. Kennedy, C. M. & St. P., Duluth, Minn.; 4th Saturday, Duluth.

PEORIA ASSOCIATION OF RAILROAD OFFICERS.—M. W. Rotchford, Union Station, Peoria, Ill.; 2d Tuesday.

RAILROAD CLUB OF KANSAS CITY.—C. Manlove, 1008 Walnut St., Kansas City, Mo.; 3d Friday in month, Kansas City.

RAILWAY BUSINESS ASSOCIATION.—Frank W. Noxon, 2 Rector St., New York; annual, November 20, 1912, New York.

RAILWAY CLUB OF PITTSBURGH.—J. B. Anderson, Penna. R. R., Pittsburgh, Pa.; 4th Friday in month, except June, July and August, Pittsburgh.

RAILWAY ELECTRICAL SUPPLY MANUFACTURERS' ASSOC.—J. Scribner, 1021 Monadnock Block, Chicago. Meetings with Assoc. Ry. Elec. Engrs.

RAILWAY GARDENING ASSOCIATION.—J. S. Butterfield, Lee's Summit, Mo.

RAILWAY DEVELOPMENT ASSOCIATION.—W. Nicholson, Kansas City Southern, Kansas City, Mo. Next meeting, Nov. 17, 1912, Cincinnati, Ohio.

RAILWAY SIGNAL ASSOCIATION.—C. C. Rosenberg, Bethlehem, Pa. Convention, Oct. 8-11, Quebec.

RAILWAY STOREKEEPERS' ASSOCIATION.—J. P. Murphy, Box C, Collinwood, Ohio.

RAILWAY SUPPLY MANUFACTURERS' ASSOC.—J. D. Conway, 2135 Oliver bldg., Pittsburgh, Pa. Meetings with M. M. and M. C. B. assocs.

RAILWAY TEL. AND TEL. APPLIANCE ASSOC.—W. E. Harkness, 284 Pearl St., New York. Meetings with Assoc. of Ry. Teleg. Sups.

RICHMOND RAILROAD CLUB.—F. O. Robinson, Richmond, Va.; 2d Monday, except June, July and August.

ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—L. C. Ryan, C. & N. W., Sterling, Ill. September 10-13, Buffalo, N. Y.

ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo.; 2d Friday in month, except June, July and Aug., St. Louis.

SIGNAL APPLIANCE ASSOCIATION.—F. W. Edmonds, 3868 Park Ave., New York. Meetings with annual convention Railway Signal Association.

SOCIETY OF RAILWAY FINANCIAL OFFICERS.—C. Niquist, La Salle St. Station, Chicago.

SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—E. W. Sandwich, A. & W. P. Ry., Montgomery, Ala.; annual, Oct. 17, Atlanta, Ga.

SOUTHERN & SOUTHWESTERN RAILWAY CLUB.—A. J. Merrill, Grant bldg., Atlanta, Ga.; 3d Thurs., Jan., March, May, July, Sept., Nov., Atlanta.

TOLEDO TRANSPORTATION CLUB.—J. G. Macomber, Woolson Spice Co., Toledo, Ohio; 1st Saturday, Toledo.

TRAFFIC CLUB OF CHICAGO.—Guy S. McCabe, La Salle Hotel, Chicago; meetings monthly, Chicago.

TRAFFIC CLUB OF NEW YORK.—C. A. Swope, 290 Broadway, New York; last Tuesday in month, except June, July and August, New York.

TRAFFIC CLUB OF PITTSBURGH.—D. L. Wells, Erie, Pittsburgh, Pa.; meetings monthly, Pittsburgh.

TRAFFIC CLUB OF ST. LOUIS.—A. F. Versen, Mercantile Library building, St. Louis, Mo. Annual meeting in November. Noonday meetings October to May.

TRAIN DESPATCHERS' ASSOCIATION OF AMERICA.—J. F. Mackie, 7042 Stewart Ave., Chicago.

TRANSPORTATION CLUB OF BUFFALO.—J. M. Sells, Buffalo; first Saturday after first Wednesday.

TRANSPORTATION CLUB OF DETROIT.—W. R. Hurley, L. S. & M. S., Detroit, Mich.; meetings monthly.

TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, N. Y. C. & H. R., East Buffalo, N. Y.

WESTERN CANADA RAILWAY CLUB.—W. H. Rosevear, P. O. Box 1707, Winnipeg, Man.; 2d Monday, except June, July and August, Winnipeg.

WESTERN RAILWAY CLUB.—J. W. Taylor, Old Colony building, Chicago; 3d Tuesday of each month, except June, July and August.

WESTERN SOCIETY OF ENGINEERS.—J. H. Warder, 1735 Monadnock Block, Chicago; 1st Monday in month, except July and August, Chicago.

Traffic News.

The Atlantic Coast Line is preparing an agricultural exhibit car to be sent to Ohio, Michigan and Illinois, where it will be shown at county fairs and on other similar occasions during the next few weeks.

The executive committee of the National Industrial Traffic League has issued a circular to its members urging them to make all possible effort to release promptly all freight cars and to load cars as near their carrying capacity as commercial conditions will permit, thereby increasing the efficiency of the available equipment in the interest of all concerned.

The carting companies which work in connection with the three principal railways centering at Winnipeg, Manitoba, the Canadian Pacific, the Canadian Northern and the Grand Trunk Pacific, have announced that on September 1 their rates will be advanced about 33 per cent. Business men of the city are already complaining and propose to take their grievance before the railway commission.

The Terminal Railroad Association of St. Louis has filed in the federal court at that city notice of its compliance with the recent order of the court, based on the decision of the Supreme Court of the United States, requiring the association to afford equal facilities to all railways desiring to do business in St. Louis. According to the notice, freight rates within distances of 100 miles will be changed, in accordance with the decree of the court, but no statement is made as to just what the changes will be.

It is estimated that the Colorado-Utah fruit crop this year will be at least twice as large as that of any previous year, and that on the line of the Denver & Rio Grande in western Colorado there will be between 9,000 and 10,000 cars of fruit, consisting of peaches, pears, apricots, plums, cantaloups and apples, to be moved between the first of September and the end of the season. It is estimated that in Utah the crop will approximate 3,000 cars.

In an effort to prove the practicability of transportation on the Illinois & Michigan canal the Chicago Portland Cement Company has started two boats laden with 2,000 bbls. of cement from Oglesby on the Vermilion river near La Salle, Ill., to Chicago. The route is to be via the canal to Lockport and then by the Chicago drainage canal to Chicago. Shippers have recently appealed to the legislature to appropriate $750,000 to dredge the Illinois & Michigan canal to make it navigable for barges.

A bill (S. 6810) regulating the issuance of bills of lading for goods moving in interstate commerce, and in part prescribing the form of such bills, was passed unanimously by the Senate on August 21; but in the House it was referred to the committee on interstate and foreign commerce, and does not appear to have been acted on; so it will go over until the next session of Congress. The bill, which was introduced on May 14 by Senator Pomerene, of Ohio, consists of 49 sections, the last one of which says that the act is to take effect on January 1, 1913. In general, the bill prescribes the characteristics of "straight" and "order" bills of lading according to usual railway practice, and the numerous sections setting forth the legal relations of the railway, the consignor and the consignee are designed to give statutory form to well-known principles of the common law. There is, however, one radical feature, that making carriers more specifically responsible than heretofore for the acts of agents. This is embodied in section 25, which reads as follows: "That if a bill of lading has been issued by a carrier or on his behalf by an agent or employee the scope of whose actual or apparent authority includes the issuing of bills of lading, the carrier shall be liable to (a) the consignee named in a straight bill or (b) the holder of an order bill, who has given value in good faith, relying upon the description therein of the goods, for damages caused by the nonreceipt by the carrier of all or part of the goods or their failure to correspond with the description thereof in the bill at the time of its issue."

Panama Canal Rate Problems.

The reduction in Suez Canal tolls announced to take effect January next is declared by the directorate of the canal to have no ulterior object with reference to the Panama route. This reduction of 10 cents a ton makes the rate equal to the $1.25 rate fixed by the Panama bill. The question is, whether the Panama toll is not too high. Already indications of revised enthusiasms as to traffic development through the Panama Canal are evident among shipping men. While trade will undoubtedly enlarge, it will do so slowly. The effect on international trade remains to be seen. The representative of one of the important lines between New York and South American ports, which also charters for the Far East, said:

"Conditions are chaotic. Undoubtedly, the Panama route is shorter. But is there any guarantee that ships may not still continue around the Cape via Magellan? The status as to Panama will be decided by the pressure as to time of transit and the figured value of the ship. Take kerosene, cement and general cargoes. To this class of freight time makes no difference. So of railway ties, bridges, etc. To send via the Cape means one-third less cost. Canal dues mean greater cost. Again, you increase service when you shorten time. The use of the canal means three trips instead of two. So, possibly, you may run into the proposition of idle boats. The solution of these problems is a long way ahead."—*Wall Street Journal.*

Floods in England.

Press despatches from England on Tuesday and Wednesday of this week reported disastrous rain storms throughout England, the damage to farm crops and trees being in many cases the most serious known for many years. More rain has fallen during the present month than in any August since 1881. In Norwich the rainfall amounted to six inches within twelve hours, and ten thousand persons were driven out of their homes. The loss to the farmers is estimated at many millions of pounds. The reports indicate that in the region of Norwich much damage was done to railway roadbeds, but no particulars are given. Throughout Suffolk and Norfolk the damage is reported as appalling.

Car Surpluses and Shortages.

Arthur Hale, chairman of the committee on relations between railways of the American Railway Association, in presenting statistical bulletin No. 125-A, giving a summary of car surpluses and shortages by groups from April 26, 1911, to August 15, 1912, says: The total surplus on August 15, 1912, was 58,623 cars; on August 1, 1912, was 65,904 cars, and on August 16, 1911, was 108,000 cars; compared with the preceding period there is a decrease in the total surplus of 7,281 cars, of which 475 is in box, 2,306 in coal, 4,657 in miscellaneous, and an increase of 157 in flat car surplus. The decrease in coal car surplus is general throughout the country, excepting in groups 1 (New England Lines), 5 (Kentucky, Tennessee, Mississippi, Alabama, Georgia and Florida), 8 (Kansas, Colorado, Oklahoma, Missouri and Arkansas), and 10 (Washington, Oregon, Idaho, California, Nevada and Arizona). The decrease in box car surplus is in groups 3 (Ohio, Indiana, Michigan and Western Pennsylvania), 9 (Texas, Louisiana and New Mexico), and 10 (as above). The decrease in miscellaneous car surplus is chiefly in groups 3 (as above), 4 (the Virginias and Carolinas), 6 (Iowa, Illinois, Wisconsin and Minnesota), and 8, 9 and 10 (as above). The increase in surplus flat cars prevails in groups 1 (as above), 2 (New York, New Jersey, Delaware, Maryland and Eastern Pennsylvania), 7 (Montana, Wyoming, Nebraska and the Dakotas), 10 (as above) and 11 (Canadian Lines).

The total shortage on August 15, 1912, was 14,722 cars; on August 1, 1912, was 9,394 cars, and on August 16, 1911, was 3,830 cars. Compared with the preceding period there is an increase in the total shortage of 5,328 cars, of which 2,216 is in box, 313 in flat, 1,924 in coal, and 875 in miscellaneous cars. The increase in coal car shortage is general throughout the country excepting in groups 4 and 5 (as above). The increase in box car shortage is general, excepting in groups 7 and 8 (as above).

REVENUES AND EXPENSES OF RAILWAYS.

MONTH OF JUNE, 1912.

Name of road.	Mileage operated at end of period.	Operating revenues			Operating expenses						Net operating revenue (or deficit).	Outside operations, net.	Taxes.	Operating income (or loss).	Increase (or decr.) comp. with last year.
					Maintenance										
		Freight.	Passenger.	Total. inc. misc.	Way and structures.	Of equipment.	Traffic.	Transportation.	General.	Total.					
Atlanta & West Point	93	$43,268	$41,037	$91,237	$11,289	$16,636	$4,588	$41,045	$5,377	$78,935	$12,302	$622	$15,256	—$2,332	—$16,095
Atlanta, Birmingham & Atlantic	662	149,557	55,046	220,247	35,515	46,565	18,442	98,749	10,942	210,213	10,034	.....	15,700	—5,666	—28,455
Atlantic & St. Lawrence	167	81,034	19,823	111,711	48,439	13,445	3,906	53,604	3,828	123,222	—11,511	.....	14,521	—26,032	—19,073
Atlantic City	167	68,664	142,513	222,194	31,018	21,248	2,062	98,816	1,346	154,490	67,704	2,696	31,007	33,393	—11,486
Bangor & Aroostook	628	164,352	53,435	234,218	84,060	15,673	3,351	78,041	11,791	192,916	41,302	.....	11,628	29,674	—80,649
Boston & Maine	2,244[1]	2,244,282	1,386,130	3,971,921	491,788	476,770	44,639	1,865,297	121,369	2,999,863	972,058	—24,780	172,350	774,928	485,730
Buffalo & Susquehanna *R. R.*	265	121,199	7,894	133,199	31,509	17,940	1,332	45,795	5,544	102,120	31,079	.....	+2,600	33,679	—4,914
Buffalo & Susquehanna *Ry.*	91	34,892	9,980	47,324	7,485	26,926	496	19,582	2,610	57,099	—9,775	16	14,000	—11,159	—9,836
Central of New Jersey	672[2]	1,866,997	480,647	2,511,963	258,924	389,358	34,343	709,551	40,919	1,433,095	1,078,868	—1,281	189,684	887,903	—291,398
Central New England	277	255,770	29,539	301,606	47,998	20,190	936	78,377	2,970	150,471	151,135	69	13,738	137,466	59,723
Central Vermont	411	221,453	96,192	352,397	33,942	47,219	8,762	124,784	7,909	222,616	129,781	1,555	12,200	119,136	—15,581
Chicago, Burlington & Quincy	9,075	4,371,169	1,849,269	6,884,366	2,867,668	1,118,032	131,950	2,360,687	186,316	6,664,653	219,713	1,652	384,994	—163,629	—1,562,369
Chicago Great Western	1,496	725,565	262,786	1,082,140	149,277	160,563	45,116	454,146	31,409	840,511	241,629	—375	36,706	204,548	—23,494
Chicago, Peoria & St. Louis	255	93,387	28,282	129,357	23,162	27,947	7,136	61,130	5,628	125,003	4,354	.....	3,205	1,149	—54,012
Delaware, Lackawanna & Western	959[3]	2,351,316	672,675	3,251,839	459,186	472,949	84,033	875,952	62,751	1,954,871	1,296,968	27,795	168,940	1,155,823	47,406
Detroit, Grand Haven & Milwaukee	191	136,687	49,927	218,444	54,881	26,094	6,939	88,833	17,564	194,311	24,133	—16	3,759	20,358	—17,156
Erie	1,988[4]	3,072,746	801,116	4,223,261	418,360	779,196	99,195	1,357,609	93,150	2,747,510	1,475,751	—26,462	91,367	1,357,922	—334,080
Georgia	307	129,958	76,292	222,988	24,458	42,604	11,612	100,304	7,138	186,116	36,872	.....	2,920	33,952	—11,693
Grand Trunk Western	347	313,769	187,999	546,031	59,138	77,987	19,555	245,903	23,196	425,779	120,252	—1,133	51,437	67,682	—60,807
Gulf & Ship Island	307	110,438	31,617	151,060	27,061	31,385	2,845	60,144	10,830	132,265	18,795	.....	4,980	13,815	—26,793
Hocking Valley	353[5]	531,327	74,193	666,228	65,905	105,642	8,273	193,899	13,065	386,784	279,444	.....	27,049	252,395	—11,427
Lehigh Valley	1,454[6]	3,076,377	441,111	3,649,193	220,328	449,200	95,783	1,006,803	105,043	1,877,157	1,772,036	—13,324	125,611	1,633,101	—30,564
Louisiana Ry. & Navigation	351	89,949	22,896	122,653	18,736	13,000	4,765	48,951	5,585	91,037	31,616	.....	3,668	27,948	—21,237
Louisville & Nashville	4,728[7]	3,033,421	1,014,018	4,328,964	803,873	837,070	104,400	1,528,521	109,930	3,383,794	945,170	7,364	209,568	742,966	—37,994
Missouri Pacific	3,918[8]	1,371,525	402,382	1,988,291	306,334	299,761	61,645	900,585	23,588	1,591,913	396,378	—6,489	118,934	270,955	1,380,828
New Orleans Great Northern	282	103,104	32,569	145,457	21,820	21,035	2,378	45,871	496	91,600	53,857	—71	1,750	52,036	772
New Orleans, Mobile & Chicago	547[9]	137,986	26,341	175,847	31,843	14,772	6,887	68,418	7,905	129,825	46,022	—31	4,646	41,345	—11,229
New Orleans, Texas & Mexico	277[10]	36,378	7,829	60,272	42,723	13,024	2,244	30,761	4,820	93,572	—33,300	.....	.....	—33,300	—46,217
New York, New Haven & Hartford	2,090[11]	2,841,312	2,406,811	5,827,209	737,772	885,370	71,303	2,094,091	—165,924	3,622,612	2,204,597	130,482	292,872	2,042,207	54,742
New York, Susquehanna & Western	156[12]	144,768	49,686	235,638	37,592	22,270	1,996	90,751	5,306	157,915	77,723	—7,608	116	69,999	—38,421
St. Louis & San Francisco	4,742[13]	2,088,174	867,472	3,192,024	331,872	497,624	72,897	1,203,668	99,988	2,206,049	985,975	.....	158,685	827,290	—317,349
St. Louis, Iron Mountain & Southern	3,315[14]	1,705,745	455,239	2,331,839	411,402	331,248	58,771	810,354	82,493	1,694,268	637,571	—9,101	102,282	526,188	706,226
St. Louis, San Francisco & Texas	244	70,854	26,853	104,025	35,170	17,728	2,084	49,144	4,594	108,720	—4,695	.....	1,216	—5,911	—10,183
Southern Pacific Co.	6,301[15]	4,183,723	2,641,280	7,426,857	790,096	947,608	218,654	2,135,627	205,841	4,297,826	3,129,031	—25,111	455,347	2,648,573	—72,136
Spokane, Portland & Seattle	556[16]	234,789	147,218	407,048	37,087	63,215	8,840	93,159	13,067	215,368	191,680	2,023	53,400	140,303	—108,880
Western Ry. of Alabama	133	47,614	43,547	96,654	20,890	33,545	5,517	43,753	8,858	112,563	—15,909	—695	3,987	—20,591	—1,012

TWELVE MONTHS OF FISCAL YEAR, 1912.

Atlanta & West Point	93	$669,798	$477,588	$1,263,363	$146,480	$245,921	$57,630	$410,245	$57,120	$917,396	$345,967	$1,710	$72,336	$275,341	—$42,603
Atlanta, Birmingham & Atlantic	662	2,405,341	658,131	3,246,302	363,135	574,432	206,176	1,288,646	137,088	2,569,477	676,825	.....	173,500	503,325	—28,122
Atlantic & St. Lawrence	167	1,076,636	318,528	1,540,810	346,319	248,307	52,321	787,486	43,863	1,478,296	62,514	.....	87,766	—25,252	76,130
Atlantic City	167	799,992	1,219,263	2,126,756	339,745	177,680	27,199	1,036,544	14,635	1,595,803	530,953	—43,221	108,007	379,725	55,288
Bangor & Aroostook	628	2,525,535	631,264	3,345,240	551,687	346,996	45,963	1,066,529	137,497	2,148,672	1,196,568	.....	119,403	1,077,165	—46,333
Boston & Maine	2,244[1]	26,811,513	15,693,675	45,990,364	5,823,545	6,411,596	475,938	21,317,653	1,058,563	35,087,295	10,903,069	143,422	2,086,863	8,959,628	1,314,916
Buffalo & Susquehanna *R. R.*	265	1,554,377	104,768	1,717,512	345,301	321,857	17,826	648,075	74,251	1,407,310	310,202	.....	26,000	284,202	—41,780
Buffalo & Susquehanna *Ry.*	91	462,028	107,744	595,572	96,774	318,546	6,039	272,558	31,203	725,120	—129,548	—472	16,800	—146,820	—57,057
Central of New Jersey	672[2]	19,039,423	5,432,071	25,887,738	2,635,358	3,831,109	360,417	8,012,482	509,413	15,348,779	10,538,959	10,093	1,502,670	9,046,382	—859,462
Central New England	277	2,957,883	335,266	3,468,626	500,793	268,754	14,702	949,006	33,589	1,766,844	1,701,782	—4,706	117,738	1,579,338	423,422
Central Vermont	411	2,691,870	1,061,805	4,085,312	404,948	639,697	91,704	1,937,883	105,036	3,179,268	906,044	5,373	145,500	765,917	—81,243
Chicago, Burlington & Quincy	9,075	57,740,419	21,083,419	86,723,068	13,541,030	14,294,033	1,528,115	29,020,384	2,268,387	60,646,949	26,076,119	—122,701	3,303,058	22,650,360	—2,923,709
Chicago Great Western	1,496	8,879,748	2,891,153	12,795,242	1,491,289	1,960,039	560,482	5,583,134	411,289	10,006,233	2,789,009	—1,755	406,725	2,380,529	—412,998
Chicago, Peoria & St. Louis	255	1,261,602	338,095	1,688,867	237,769	345,013	87,551	782,295	70,328	1,522,956	165,911	.....	50,505	115,406	—43,272
Delaware, Lackawanna & Western	959[3]	25,553,999	7,571,787	35,492,527	4,392,036	6,020,915	815,323	10,995,398	770,390	22,994,062	12,498,465	451,265	2,014,640	10,935,090	—2,038,894
Detroit, Grand Haven & Milwaukee	191	1,356,093	614,656	2,273,729	285,990	314,050	77,258	1,185,365	67,821	1,930,484	343,245	—691	35,437	307,117	29,071
Erie	1,988[4]	35,701,864	8,935,163	48,438,095	5,266,005	8,601,123	1,140,811	16,938,124	1,076,199	33,022,262	15,415,833	—205,360	1,662,559	13,547,914	—2,044,500
Georgia	307	2,238,773	922,847	3,378,749	311,525	529,429	137,634	1,508,047	95,774	2,582,409	796,340	.....	32,845	763,495	—10,242
Grand Trunk Western	347	4,124,332	2,126,606	6,666,805	655,621	956,842	227,891	2,813,898	175,709	4,829,961	1,836,844	—18,055	399,422	1,419,367	214,086
Gulf & Ship Island	307	1,427,620	404,531	1,982,740	265,738	363,517	29,347	596,721	103,513	1,358,836	623,904	.....	57,883	566,021	—68,594
Hocking Valley	353[5]	5,958,009	874,596	7,303,679	853,403	1,192,191	99,621	2,245,657	188,170	4,579,042	2,724,637	.....	414,188	2,310,449	83,200
Lehigh Valley	1,454[6]	30,892,556	4,703,734	36,905,935	3,963,589	6,313,317	980,117	12,606,962	856,265	24,720,250	12,185,685	—291,239	1,451,311	10,443,135	2,371,303
Louisiana Ry. & Navigation	351	1,383,617	266,856	1,783,970	290,157	168,688	70,314	714,080	77,529	1,320,768	463,202	.....	56,868	406,334	29,087
Louisville & Nashville	4,728[7]	40,601,288	12,227,934	56,211,788	8,828,755	10,071,303	1,178,108	18,408,197	1,139,964	39,626,327	16,585,461	—8,179	1,854,684	14,722,598	1,106,365
Missouri Pacific	3,918[8]	17,514,172	4,654,067	24,401,135	4,028,591	4,227,377	711,559	11,316,936	809,142	21,093,605	3,307,530	—49,987	1,110,958	2,146,585	1,700,230
New Orleans Great Northern	282	1,175,308	340,778	1,635,283	244,562	219,611	30,232	523,091	80,173	1,097,669	537,614	—861	21,423	515,330	—78,220
New Orleans, Mobile & Chicago	547[9]	1,545,592	340,778	2,002,728	327,611	215,352	40,217	693,521	95,767	1,372,468	630,260	—617	53,000	576,643	—118,726
New Orleans, Texas & Mexico	277[10]	1,109,392	198,768	1,411,881	354,089	180,722	44,791	641,493	79,153	1,300,248	111,633	.....	3,473	108,160	—79,325
New York, New Haven & Hartford	2,090[11]	32,130,892	26,816,435	64,933,065	6,829,361	8,046,992	412,880	25,163,819	1,650,966	42,104,018	22,829,047	1,388,155	3,792,872	20,424,330	1,348,098
New York, Susquehanna & Western	156[12]	1,923,250	588,419	2,862,098	276,078	276,196	23,350	1,146,713	59,580	1,781,917	1,080,181	—24,936	196,726	858,519	—246,427
St. Louis & San Francisco	4,742[13]	25,872,606	10,820,594	39,618,188	4,680,020	5,191,186	1,023,480	14,539,406	1,177,381	26,611,473	13,006,715	.....	1,912,936	11,093,779	—755,499
St. Louis, Iron Mountain & Southern	3,315[14]	22,000,184	6,008,376	30,102,115	4,636,178	4,094,409	646,455	9,951,378	858,567	20,186,987	9,915,128	—70,866	1,132,422	8,711,840	1,781,410
St. Louis, San Francisco & Texas	244	902,739	318,648	1,304,250	238,874	182,304	34,275	605,773	58,496	1,119,722	184,528	.....	13,189	171,339	174,854
Southern Pacific Co.	6,301[15]	52,944,791	31,279,922	90,621,090	10,123,485	11,201,494	2,189,608	26,170,200	2,342,795	52,018,582	38,602,508	196,663	4,309,577	34,489,594	—775,837
Spokane, Portland & Seattle	556[16]	2,812,604	1,697,076	4,814,561	514,044	514,766	87,324	1,219,304	140,820	2,476,258	2,338,303	13,094	527,405	1,823,992	—240,175
Western Ry. of Alabama	133	783,471	497,851	1,391,011	237,913	277,347	64,676	424,953	76,440	1,081,329	309,682	—637	54,722	254,323	33,184

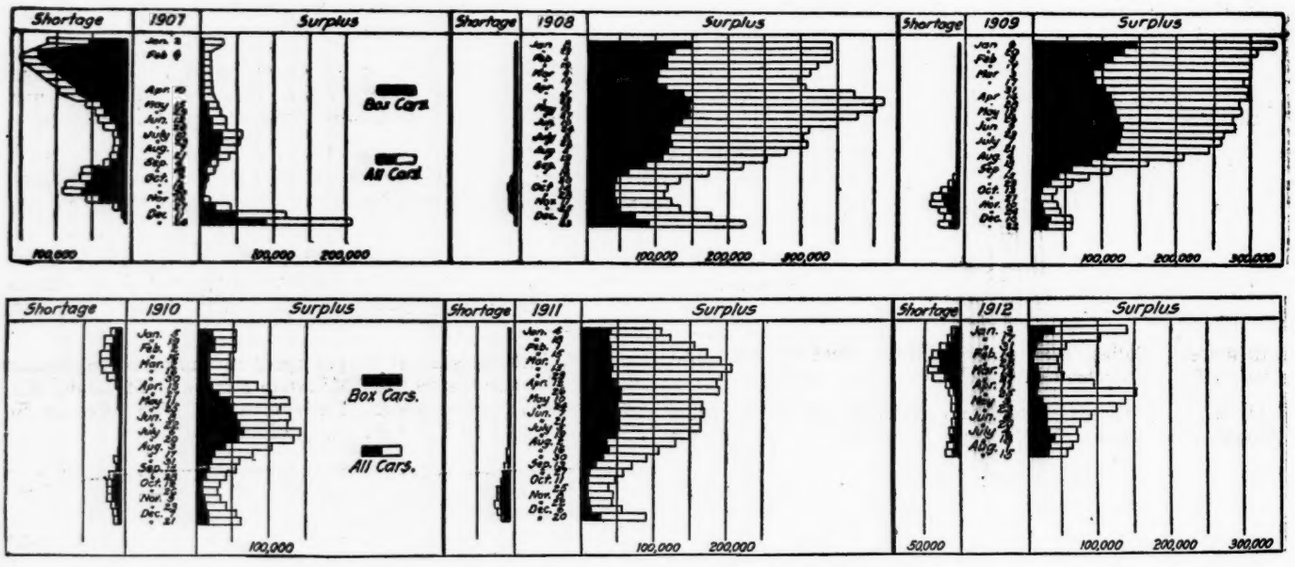
Operated at end of previous period—[1] 2,243; [2] 631; [3] 930; [4] 1,995; [5] 350; [6] 1,430; [7] 4,622; [8] 3,916; [9] 404; [10] 264; [11] 2,040; [12] 152; [13] 4,732; [14] 3,313 [15] 6,187; [16] 551. — Indicates Deficits, Losses and Decreases.

The increase in flat car shortage is chiefly in groups 1, 2, 5 and 8 (as above). The increase in miscellaneous car shortage prevails in groups 2, 3, 4, 5, 6, 8 and 9 (as above). Compared with the same date of 1911 there is a decrease in the total surplus of 49,377 cars, of which 10,353 is in box, 1,860 in flat, 24,532 in coal, and 12,632 in miscellaneous cars. There is an increase in the total shortage of 10,892 cars, of which 5,094 is in box, 2,141 in flat, 2,837 in coal and 820 in miscellaneous cars.

CAR SURPLUSES AND SHORTAGES.

Date.	No. of roads.	Surpluses					Shortages				
		Box.	Flat.	Coal, gondola and hopper.	Other kinds.	Total.	Box.	Flat.	Coal, gondola and hopper.	Other kinds.	Total.
Group *1.—August 15, 1912	7	662	353	159	40	1,214	656	199	702	21	1,578
" 2.— " 15, 1912	26	1,954	95	2,630	770	5,449	435	127	977	29	1,568
" 3.— " 15, 1912	29	2,386	179	1,097	1,840	5,502	86	363	619	162	1,230
" 4.— " 15, 1912	11	371	0	382	350	1,103	1,819	727	1,430	531	4,507
" 5.— " 15, 1912	22	768	0	238	1,128	2,134	609	562	413	50	1,634
" 6.— " 15, 1912	26	12,189	218	716	3,701	16,824	459	17	217	9	702
" 7.— " 15, 1912	4	0	50	0	304	354	193	0	217	0	410
" 8.— " 15, 1912	18	1,597	98	1,069	3,850	6,614	860	286	67	4	1,217
" 9.— " 15, 1912	13	813	138	397	866	2,214	690	0	50	150	890
" 10.— " 15, 1912	21	6,716	1,148	2,970	5,986	16,820	364	28	11	0	403
" 11.— " 15, 1912	7	103	22	0	270	395	242	249	0	92	583
Total	184	27,559	2,301	9,658	19,105	58,623	6,413	2,558	4,703	1,048	14,722

*Group 1 is composed of New England lines; Group 2—New York, New Jersey, Delaware, Maryland and Eastern Pennsylvania lines; Group 3—Ohio, Indiana, Michigan and Western Pennsylvania lines; Group 4—West Virginia, Virginia, North and South Carolina lines; Group 5—Kentucky, Tennessee, Mississippi, Alabama, Georgia and Florida lines; Group 6—Iowa, Illinois, Wisconsin, Minnesota and the Dakotas lines; Group 7—Montana, Wyoming and Nebraska lines; Group 8—Kansas, Colorado, Missouri, Arkansas and Oklahoma lines; Group 9—Texas, Louisiana and New Mexico lines; Group 10—Oregon, Idaho, California and Arizona lines; Group 11—Canadian lines.



Car Surpluses and Shortages in 1907 to 1912.

The accompanying table gives car surplus and shortage figures by groups for the last period covered in the report, and the diagram shows total bi-weekly surpluses and shortages from 1907 to 1912.

INTERSTATE COMMERCE COMMISSION.

The commission has suspended until December 21 tariffs increasing freight rates on manganese ore from Elizabeth, N. J., westward over the Central Railroad of New Jersey.

The commission has suspended until December 24 certain tariffs showing advances in freight rates on coal over the Cleveland, Cincinnati, Chicago & St. Louis from mines in Illinois to Davenport and other points in Iowa.

The commission has suspended from August 26 until December 24, advances in rates for the transportation of cotton linters from a number of points in Texas to New Orleans, La., and other destinations. The advances which have been suspended amount in each instance to 1 cent per 100 lbs. and apply on both domestic and export shipments.

Walter E. McCormack, as attorney for twelve salt companies of Michigan and Ohio, has filed a complaint with the Interstate Commerce Commission asking a reduction in the rates on salt from Michigan and Ohio to points west of the Mississippi by one and one-thirds cents per 100 lbs. This is to meet a similar reduction made by the railways from Chicago recently after they had canceled their joint rates with the Michigan, Indiana & Illinois Line.

SUNNING-KONGMOON RAILWAY, CHINA.—The extension of the Sunning railway in Kwangtung province to Kongmoon has been completed. The road is now 67 miles long and runs from the river port of Kongmoon to one of the richest portions of the Pearl river delta. It was built by Chinese without foreign assistance. Its rolling stock at present consists of seven American locomotives, five German locomotives, 18 American passenger coaches, 70 box cars, and about 70 flat cars of the American type. The extension of this railway north from Kongmoon, and eventually to Canton, and south from Sunning City to the sea, is to be undertaken as soon as affairs in that portion of China become normal again.

Railway Officers.

ELECTIONS AND APPOINTMENTS.

Executive, Financial and Legal Officers.

W. C. Logan has been appointed auditor of the Wichita Valley Railway, with office at Wichita Falls, Tex., succeeding O. H. Bower, resigned to accept service with another company.

Samuel M. Felton, president of the Chicago Great Western, with office at Chicago, has been appointed also receiver of the Pere Marquette, succeeding Newman Erb, resigned.

Holly Hatcher, who resigned on August 1 as general superintendent of the Georgia, Southern & Florida, has been appointed assistant to the president of the Gulf Line Railway, with office at New York.

E. A. Wigren, auditor of disbursements of the Michigan Central, at Detroit, Mich., has been appointed assistant auditor. R. R. Richards, assistant auditor of disbursements, at Detroit, succeeds Mr. Wigren.

A committee appointed to recommend a successor to N. S. Meldrum, who wishes to be relieved of his duties as president of the Seaboard Air Line, has named W. J. Harahan, vice-president of the Erie. The board of directors has not taken any action on the recommendation as yet.

Thornwell Fay, who has resigned, effective September 1, as president of the Southern Pacific lines in Texas and Louisiana, as has been announced in these columns, remains a director in Morgan's Louisiana & Texas Railroad & Steamship Company, the Louisiana Western and the Texas & New Orleans.

Operating Officers.

C. M. Payn has been appointed inspector of freight service of the Missouri, Kansas & Texas, with office at Denison, Tex.

J. Frank Maguire, assistant trainmaster of the Lehigh Valley, at Wilkesbarre, Pa., has been appointed inspector of transportation, with headquarters at South Bethlehem, Pa. This is in addition to the present position of the same title, held by F. M. Barker.

W. A. Webb, assistant to the president of the Missouri, Kansas & Texas Railway and the Texas lines of that company, has been appointed general manager of the same properties, with office at Dallas, Tex., and his former office has been abolished, effective September 1.

O. Cornelisen, assistant superintendent of the Virginia Railway at Princeton, W. Va., and formerly superintendent of the Northern division of the Kansas City Southern at Pittsburg, Kan., has been again appointed to the latter position, succeeding C. J. Burkholder, resigned.

Andrew P. Titus, superintendent of the Toledo division of the Wheeling & Lake Erie at Canton, Ohio, has been appointed general superintendent of the Chicago & Alton, with office at Chicago, a new position. A sketch of Mr. Titus was published in our issue of August 16, page 325, following his promotion to superintendent of the Toledo division of the Wheeling & Lake Erie, on July 1.

F. L. Johnson, general superintendent of the Iowa district of the Chicago, Burlington & Quincy, at Burlington, Ia., has been appointed general superintendent of the Illinois district, with office at Galesburg, Ill., succeeding E. S. Koller, promoted. Robert Rice, superintendent of the Aurora division, at Aurora, Ill., succeeds Mr. Johnson. A. G. Smart, superintendent of the Omaha division, at Omaha, Neb., succeeds Mr. Rice.

George W. Berry, terminal superintendent of the Illinois Central at Chicago, has been appointed superintendent of transportation of that road and the Yazoo & Mississippi Valley, with office at Chicago, a new position. James H. Brinkerhoff, superintendent of passenger terminals of the Illinois Central at Chicago, succeeds Mr. Berry. Daniel E. Hilgartner has been appointed trainmaster, with office at Chicago, having jurisdiction over passenger service between Randolph street and Matteson, and Twelfth street and Parkway, and the office of superintendent of passenger terminals has been abolished.

James H. Brinkerhoff, who has been appointed terminal superintendent of the Illinois Central, with office at Chicago, as has been announced in these columns, was born May 31, 1870, at Kansas City Mo. He attended high school at Kansas City, and Williams College at Williamstown, Mass. Mr. Brinkerhoff began railway work July 2, 1891, with the Union Pacific, where he was clerk, paymaster and assistant superintendent. He left the Union Pacific on May 1, 1906, to become assistant superintendent of the Denver & Rio Grande, and from October, 1907, to December, 1909, he was superintendent of the Rio Grande Junction Railway. He was made general superintendent of the Grand Junction & Grand River Valley in December, 1909, and held that position until July, 1911; two months later he was made superintendent of passenger terminals of the Illinois Central at Chicago, from which position he has now been promoted.

Traffic Officers.

T. J. Keefe has been appointed soliciting freight agent of the Tennessee Central, with office at St. Louis, Mo.

S. Oslie has been appointed traveling agent of the Duluth, Missabe & Northern, with headquarters at Duluth, Minn.

J. G. R. Williams has been appointed export and import agent of the Texas & Pacific, with headquarters at New Orleans, La.

R. W. Myles has been appointed commercial agent of the Chicago Great Western, with office at Cleveland, Ohio, succeeding G. C. Brown, resigned.

W. D. Fosler, traveling passenger agent of the Chicago, Rock Island & Pacific at Omaha, Neb., has been appointed traveling passenger agent, with office at Des Moines, Iowa.

D. M. Davis, traveling agent of the Chicago & North Western at Sioux City, Iowa, has been appointed traveling agent, with office at Philadelphia, Pa., succeeding Frank Irish, deceased.

Paul Junkin has been appointed traveling passenger agent of the Texas & Pacific and the International & Great Northern, with office at Chicago, succeeding C. H. Morgan, resigned.

J. N. Githens, general freight agent in charge of solicitation of the Missouri Pacific-Iron Mountain system, at St. Louis, Mo., has been appointed freight traffic manager, with office at St. Louis, succeeding B. M. Flippin, resigned.

E. A. Lalk has been appointed commercial agent of the Chicago, Milwaukee & Puget Sound, with office at Aberdeen, Wash., succeeding R. J. Daniels, transferred to Tacoma, Wash. H. R. McCann has been appointed traveling freight and passenger agent, with headquarters at Bellingham, Wash.

J. H. Meglemry, commercial agent of the New York Central Lines at Atlanta, Ga., has been appointed division freight agent of the Michigan Central, with office at Buffalo, N. Y., succeeding George C. Ransom, resigned to become chairman of the Canadian Freight Association, and W. A. Shropshire, commercial agent of the New York Central Lines, at Jacksonville, Fla., succeeds Mr. Meglemry. J. D. Bowden, traveling freight agent at Tampa, Fla., succeeds Mr. Shropshire; R. A. Patten, soliciting freight agent at Tampa, succeeds Mr. Bowden.

Randall Clifton, general freight agent of the Southern Railway at Atlanta, Ga., has been appointed assistant freight traffic manager, with headquarters at Washington, D. C., succeeding G. R. Browder, resigned to go to Sao Paulo, Brazil, as freight director of the Brazil Railway Company. This company controls the Sorocabaña, the Sao Paulo & Rio Grande and the Madeiro Mamora railway companies. W. H. Paxton, assistant general freight agent, at Atlanta, Ga., succeeds Mr. Clifton. G. K. Caldwell, division freight agent, at Columbia, S. C., succeeds Mr. Paxton. J. A. Smith, Jr., division freight

agent, at Augusta, Ga., succeeds Mr. Caldwell. H. M. Cobb, commercial agent at Charleston, S. C., succeeds Mr. Smith, with office at Augusta.

William Darius Skinner, who has been appointed assistant traffic manager of the Oregon-Washington Railroad & Navigation Company, with office at Portland, Ore., as has been announced in these columns, was born April 10, 1873, at Coldwater, Mich. He received a high school education at Cedar Springs, Mich. Mr. Skinner began railway work July 2, 1890, with the Iowa Central at Marshalltown, Iowa, where he occupied various positions in the accounting department until September, 1894, his last position having been that of chief revising clerk. He then went with the Oregon Railroad & Navigation Company at Portland, Ore., where he was consecutively revising clerk in the accounting department, chief clerk in the freight accounting department, and chief clerk in the general freight office. In September, 1904, Mr. Skinner was promoted to assistant general freight agent of the O. R. & N. and the Southern Pacific lines in Oregon, and on January 1, 1910, he was made general freight and passenger agent of the Oregon & Washington at Seattle, Wash. When the Oregon & Washington and the Oregon Railroad & Navigation Company were merged in the Oregon-Washington Railroad & Navigation Company in January, 1911, he was given the same title with the latter company, and from December 15, 1911, until July 22, 1912, the date of his recent promotion to assistant traffic manager, he was general freight agent in charge of rates and tariffs.

Engineering and Rolling Stock Officers.

William O'Connell has been appointed roadmaster of the Kansas City Southern, with headquarters at Pittsburg, Kan., succeeding J. W. Ross, transferred to Neosho, Mo.

J. O. Enockson, roundhouse foreman of the Chicago, St. Paul, Minneapolis & Omaha, at Altoona, Wis., has been appointed master mechanic, with headquarters at Sioux City, Iowa.

F. Lavis has been appointed chief engineer of the Argentine Railway Company, with office at Buenos Aires, Argentine Republic. He retains his office as a consulting engineer at 50 Church street, New York.

Joseph Ury Crawford, consulting engineer of the Pennsylvania Railroad, with headquarters at Philadelphia, Pa., will be retired under the pension rules of the company on September 1, as has been announced in these columns. He was born at Ury Farm, Philadelphia, on August 25, 1842, and was educated at John W. Faires' school, from which he went to the University of Pennsylvania, in the class of 1862. He served in the Union army during the Civil War. From 1865 to 1870, he was engaged in surveys crossing the Allegheny mountains for the Atlantic & Great Western Railroad, and in New York and New England upon surveys and railway construction. He entered the service of the Pennsylvania Railroad in 1871 as senior assistant engineer of the Alexandria & Fredericksburg. He was principal assistant engineer, and afterwards engineer, of the California division of the Texas & Pacific, under Colonel Thomas A. Scott, and, on his recommendation was appointed consulting engineer of the government of Japan in 1878. On the completion of his work in that country he was decorated by the Emperor of Japan with the Order of the Rising Sun. After he returned to this country he was employed by the late Jay Gould to make transcontinental examinations and surveys between the Pacific coast and Salt Lake City, Utah, as well as in Wyoming and Nebraska. In the fall of 1882 he returned to the service of the Pennsylvania Railroad as chief engineer of the Pennsylvania Schuylkill Valley Railroad, and in 1886 and 1887 built the Piedmont & Cumberland. He was appointed assistant to J. N. DuBarry, second vice-president of the Pennsylvania Railroad in August, 1889, and on the death of that officer was appointed engineer of branch lines. In addition to that position he was a director of various branch railways associated with the Pennsylvania system. On July 28, 1897, he was appointed chief engineer in charge of the construction of the Norfolk & Portsmouth Belt Line, which connects with the New York, Philadelphia & Norfolk. From October, 1898, to May, 1899, he was consulting engineer for the United States government to examine into and report upon the transportation facilities in Cuba. On April 8, 1902, he was appointed engineer of the New York Connecting Railroad, and has continued in that position. In the fall of 1910 Mr. Crawford was again decorated by the Emperor of Japan for faithful service as consulting engineer and inspector of the Imperial Government Railways, this time with the Order of the Sacred Treasure, Insignia of the Third Class, Rising Sun. Since January 5, 1911, he has been consulting engineer of the Pennsylvania Railroad.

J. U. Crawford.

Robert Robertson, who has been for some time in the mechanical department of the Guayaquil & Quito, at La Tacunga, Ecuador, has been appointed superintendent of motive power and floating equipment, with headquarters at Huigra, succeeding C. O. Bertsch, resigned.

A. J. Baumbush has been appointed general foreman of the New York Central & Hudson River, at the Grand Central Terminal, New York. He will be in charge of inspection, repairs and cleaning of all equipment entering the terminal, whether owned by the New York, New Haven & Hartford on the New York Central.

For the purpose of investigation and consideration by the Lake Shore & Michigan Southern of special engineering subjects the position of consulting engineer has been created, with headquarters at Cleveland, Ohio. Samuel Rockwell, heretofore chief engineer, has been appointed consulting engineer, reporting to the general manager. P. H. Dudley remains consulting engineer of the New York Central Lines, with office at New York.

Frank Ringer, whose appointment as engineer maintenance of way of the Missouri, Kansas & Texas, with office at Parsons, Kan., has been announced in these columns, was born August 17, 1869, at Paola, Kan. He is a graduate of the school of engineering of the University of Kansas. Mr. Ringer began railway work in June, 1894, with the Missouri, Kansas & Texas, and has been in continuous service on that road. He was levelman on location for six months; was rodman and instrumentman on maintenance of way from November, 1894, to May, 1895, and from the latter date until June, 1902, was draftsman in the chief engineer's office. He was then appointed assistant engineer in the chief engineer's office, in charge of location and construction of extensions in Oklahoma, and in April, 1905, was made resident engineer in charge of maintenance of way at Sedalia, Mo., where he remained until February of the following year. He was principal assistant engineer, at Parsons, in charge of maintenance of way and extension improvements in Oklahoma, from February, 1906, to August, 1911. He was then appointed assistant chief engineer, with office at St. Louis, Mo., which position he held until August 1, 1912, the date of his recent promotion to engineer maintenance of way.

OBITUARY.

Wesley C. Beach, engineer in charge of construction of the Des Moines-Allerton cut-off of the Chicago, Rock Island & Pacific, died, following an operation, in Chicago on August 23. Mr. Beach was 48 years of age.

Equipment and Supplies.

LOCOMOTIVE BUILDING.

The Grand Trunk is in the market for 25 locomotives.

The Northern Pacific is figuring on 50 mikado locomotives.

Sussdorf, Zaldo & Company, New York, are in the market for 1 locomotive.

The Lehigh Valley is in the market for 7 mikado locomotives and 5 Pacific type locomotives.

The Keystone Mills Company has ordered 1 mogul locomotive from the Baldwin Locomotive Works.

The Canadian Pacific is in the market for 25 ten-wheel locomotives and 25 consolidation locomotives.

The Pennsylvania Lines West have ordered 50 locomotives from the American Locomotive Company.

The San Antonio & Aransas Pass has ordered 10 consolidation locomotives from the Lima Locomotive Corporation.

The New Jersey Zinc Company has ordered 1 six-wheel switching locomotive from the Baldwin Locomotive Works.

The Palmetto Phosphate Company has ordered 1 six-coupled double-ender locomotive from the Baldwin Locomotive Works.

The New York, New Haven & Hartford is in the market for 6 ten-wheel locomotives and 4 six-wheel switching locomotives. This company is also in the market for 10 underframes for six-wheel switching locomotives.

The Pacific Gas & Electric Company, San Francisco, Cal., has ordered 1 four-wheel switching locomotive from the American Locomotive Company. The dimensions of the cylinders will be 11 in. x 16 in.; diameter of driving wheels will be 33 in., and the total weight in working order will be 39,000 lbs.

The La Belle Iron Works, Steubenville, Ohio, has ordered 1 four-wheel switching locomotive from the American Locomotive Company. The dimensions of the cylinders will be 17 in. x 24 in.; the diameter of the driving wheels will be 50 in., and the total weight in working order will be 98,000 lbs.

The Buckeye Steel Castings Company, Columbus, Ohio, has ordered 1 six-wheel switching locomotive from the American Locomotive Company. The dimensions of the cylinders will be 20 in. x 26 in.; the diameter of the driving wheels will be 50 in., and the total weight in working order will be 129,000 lbs.

The Buffalo, Rochester & Pittsburgh has ordered 1 Pacific type locomotive and 9 mikado locomotives from the American Locomotive Company. The Pacific type locomotive will have 24½ in. x 26 in. cylinders; 73 in. driving wheels, and in working order will weigh 258,000 lbs. The mikado locomotives will have 26½-in. x 30-in. cylinders; 63-in. driving wheels, and in working order will weigh 275,000 lbs.

CAR BUILDING.

The Wabash is making inquiries for 500 hopper cars.

The Pennsylvania Railroad is in the market for 65 coaches.

The Missouri, Kansas & Texas is in the market for 2,000 box cars.

The Northern Pacific is in the market for 2,500 center sills for 40-ton box cars.

The Armour Car Lines, Chicago, will build 500 refrigerator cars at the company's shops.

The Wells Fargo Express Company, New York, is in the market for from 40 to 75 express cars.

The Kansas City Southern is in the market for 1,000 coal cars, 200 automobile cars and 100 ballast cars.

The Canadian Pacific is in the market for 1,000 box cars, 20 baggage cars, 15 tourist cars and 10 first-class coaches.

IRON AND STEEL.

The Atchison, Topeka & Santa Fe is making inquiries for 40,000 tons of rails.

The Chicago, Burlington & Quincy is making inquiries for 50,000 tons of rails.

Supply Trade News.

The American Locomotive Company, New York, has received an order from the Oregon-Washington Railroad & Navigation Company for one 12-ft. cut, scoop-wheel, rotary snow plow, with 9,000-gal. tender, and with 18-in. x 26-in. cylinders.

The Pennsylvania Railroad has ordered four car floats for use in the New York harbor. Two of the floats will be built by the American Car & Foundry Company, New York; one by the Perth Amboy Dry Dock Company, Perth Amboy, N. J., and the other by Ira Bushley, Brooklyn, N. Y.

W. M. Davidson, associated with J. W. Forsinger, Chicago, in charge of railway time inspection service, has resigned to enter partnership with R. S. Church, chief watch inspector for several large western roads. The new firm will be Church, Davidson & Company, with headquarters in Chicago.

E. L. Burdick, whose resignation as assistant engineer of tests of the Atchison, Topeka & Santa Fe, with headquarters in Topeka, Kan., effective on September 1, was announced last week, has been appointed mechanical engineer of the Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., with office in that city.

K. F. Nystrom has been appointed mechanical engineer of the Acme Supply Company, Chicago, with office in that city. Mr. Nystrom was formerly connected with the Southern Pacific as designing engineer for its electric motor cars, and later was assistant mechanical engineer at the St, Charles, Ill., plant of the American Car & Foundry Company, New York.

The Isthmian Canal Commission will receive bids until September 4 on miscellaneous supplies, including galvanized sheet iron and steel, Babbitt metal, brass tubing, chain, iron and steel washers, steam and water gages, hose, packing, gaskets, magnesia pipe covering, etc. (Circular 726); and until September 10, on iron and steel castings, steel reinforcing bars, cross ties, etc. (Circular 727).

The Allis-Chalmers Company, Milwaukee, Wis., has received a contract to equip the Duluth, Minn., plant of the Minnesota Steel Company. The equipment includes one 40-in. reversing blooming mill, one 28-in. finishing mill, one 18-in. roughing mill, a 40-in. and 60-in. x 60-in. twin tandem reversing engine, and a 28-in. rail mill with manipulator and gear. The contract is for delivery within from eight months to a year.

Henry W. Jacobs, as was mentioned in the *Railway Age Gazette* of August 23, has been made president of the Oxweld Railroad Service Company, Chicago. This company was organized to install oxy-acetylene welding plants on railways. G. H. Pearsall and C. B. Moore, who were recently made vice-presidents of the Jacobs-Shupert U. S. Firebox Company, New York, as mentioned in the *Railway Age Gazette* of July 5, page 35, have also been made vice-president and vice-president and treasurer, respectively, of the Oxweld company. Mr. Jacobs was born in Atchison, Kan., September 28, 1874. At the age of 13 he began his apprenticeship as machinist, moulder and structural iron worker in the Seaton Foundry & Machine Company, Atchison. After serving five years with that company, he went to the United States Gun Shop, Washington, D. C., as machinist. He familiarized himself with the design, construction and performance of marine engines, as for several years he was engaged in testing marine machinery on ves-

Henry W. Jacobs.

sels. He then went to the Sprague Electric Company, New York, and later to the Crocker-Wheeler Company, Ampere, N. J. He then went to R. Hoe & Company, makers of printing presses and newspaper machinery, as tool designer. In 1899 he was made superintendent of the Vulcan Engineering Company, New York, engaged in general repair work and building stationary and marine machinery. He then entered railway service as tool foreman of the Chicago, Burlington & Quincy. He held this position at various shops of that road until 1903, when he was made shop demonstrator of the Omaha, Neb., shops of the Union Pacific. Later he was given supervision of shop practices and methods in all the repair shops of that company. In 1904 he was made engineer of shop methods for the Atchison, Topeka & Santa Fe, and in December, 1906, assistant superintendent of motive power, with jurisdiction over the entire system, which position he held until July 1, 1912, when he resigned to go to the Oxweld company.

TRADE PUBLICATIONS.

DENVER & RIO GRANDE.—The passenger department has issued a handsome folder in the interest of the forty-sixth National Encampment of the G. A. R., to be held in Los Angeles, Cal., September 9-14. The folder is illustrated with views in and around Los Angeles and along the route.

PUMPING BY COMPRESSED AIR.—The Ingersoll-Rand Company, New York, has devoted catalog No. 75 to Water Lifted by Compressed Air. This catalog is well illustrated and explains thoroughly the different methods employed, and includes figures showing the actual cost of operating the installations.

HYDRO-ELECTRIC POWER DEVELOPMENT.—The General Electric Company, Schenectady, N. Y., has published bulletin No. 4966 on Hydro-Electric Power Development, illustrating and describing in considerable detail a number of important developments of this nature. The bulletin includes a long list of large transformers built by this company.

WHITE RIVER DEVELOPMENT.—The Stone & Webster Engineering Corporation, Boston, Mass., has published an unusually attractive booklet entitled White River Development, in which the work done by this corporation in the Puget Sound district of Washington is illustrated and described. The booklet is an excellent example of how attractive an industrial publication may be made. The photographs are clear and well chosen, and the typography and paper are of the best. It is bound in heavy green paper and on the cover is a tastefully colored bird's-eye view of the region described.

GRAIN ELEVATORS IN RUSSIA.—It is reported that a group of American capitalists have approached the Russian government with a request for permission to form a company, the object of which would be to equip Russia with a system of grim elevators. The government, however, is also considering the construction of a number of such granaries.

NEW BRIDGE FOR THE VOGAL RIVER, RUSSIA.—The Russian government has consented to the construction of a bridge across the Volga river near Simbirsk. This will be the fifth bridge and the longest of all. It will have a length of 6,300 ft. The bridge will provide an outlet for grain from the province of Ufa. The construction of the bridge is intrusted to the Volga-Bougoulma railway.

NEW LINES IN RUSSIA.—The Tumen-Omsk railway will be completed before the end of the year. The ministry of ways of communication proposes to divide this Siberian line into two separate railways—the Tomsk railway and the Omsk railway with the Omsk-Tumen branch. A group of Moscow financiers has applied to the ministry of finance for permission to construct the Kazan-Ekaterinburg railway, with a branch from Nizhni-Novgorod to Kotelnitch. The Moscow railway had previously applied for the concession, and in view of the fact that there are now other competitors, the ministry's decision of the question has been postponed until autumn. The head office of the newly formed East Ural railway will be located in St. Petersburg and the management of the line at Ekaterinburg. Besides this line, several others in the east of Russia are to have their official headquarters in St. Petersburg.

Railway Construction.

New Incorporations, Surveys, Etc.

ALBUQUERQUE EASTERN.—See New Mexico Central.

ARKANSAS ROADS.—Residents of Texarkana, Ark., are organizing a company to build from Texarkana northeast via Nashville, New Boston and DeKalb to Clarksville, about 140 miles. Rollin W. Rodgers, Texarkana, may be addressed.

BINGHAM & GARFIELD.—An officer writes that this company, which operates a line from Garfield Junction, Utah, south to Bingham, 19½ miles, has given a contract to the Utah Construction Company to build an extension from the southern terminus north, thence south into the Bingham mining district. The extension is located on steep mountain sides, working from a level of 6,340 ft. above sea level to an elevation of 6,687 ft. It will be a switchback railway on 4 per cent. maximum grades, compensated, and with 16 deg. maximum curves. There will be two wooden frame trestles on pile foundations, one 428 ft. long with a maximum height of 30 ft., and one 590 ft. long with a maximum height of 91 ft. The company is building a five-stall engine house, car repair shop, and coaling station at Magna, also the necessary hotel accommodations, sleeping quarters, etc., for the employees. The Bingham & Garfield was originally built to carry ore from the Bingham mining district to the mills and smelters at Garfield. H. C. Goodrich, chief engineer, Salt Lake City.

CANADIAN PACIFIC.—According to press reports, the Canadian Pacific has under consideration the question of building an extension north via Chatham, Ont., and Petrolia to Sarnia. J. M. R. Fairbairn, Montreal, Que., is assistant chief engineer of the eastern lines.

CHERRYVALE, OKLAHOMA & TEXAS.—This company was incorporated in Oklahoma in 1902 to build from Kansas City, Mo., southwest to El Paso, Tex. In June last it was said that grading had been finished on about 30 miles from Caney, Kan., south to Nowata, Okla. The company gave notice in Paris some weeks ago of its intention to exchange some of its outstanding bonds for a new issue, so that all of the $2,000,000 bonds outstanding shall have the same par value. Last May the company filed an application in Oklahoma to change its name to the Kansas, Oklahoma & Southwestern. It is the intention, it is said, to complete the line from Caney, southwest to Siloam Springs, Ark., 100 miles, and from Caney to Pawhuska, Okla., 40 miles. The directors include R. E. Wade, G. A. Masters, S. M. Porter, Caney. (May 31, p. 1220.)

CLARKSBURG NORTHERN.—An officer writes that the general contract has been given to Joseph Fuccy, New Martinsville, W. Va., to build from New Martinsville, south via Middlebourne, Centerville, Shirley, Center Point, Sedalia and Pittsburgh Landing to Salem, 49 miles. Grading on the first 14 miles has been finished to Middlebourne, and track has been laid on ½ mile. The maximum grade will be 2 per cent., and maximum curvature 12 deg. There will be a 110-ft. steel bridge and a 46-ft. steel bridge. The following trestles will be put up: 20 ft. high and 1,155 ft. long; 45 ft. high and 300 ft. long; 40 ft. high and 600 ft. long; 76 ft. high and 315 ft. long; and 17 trestles having an average height of 12 ft., and an average length of 78 ft. The company expects to develop a traffic in coal and farm produce. Joseph Fuccy, president; H. M. Fry, chief engineer, New Martinsville.

DALLAS SOUTHERN TRACTION.—The Stone & Webster Management Association, Boston, Mass., has finished work on the Dallas Southern Traction from Dallas, Tex., south to Waxahachie, about 30 miles, and the line is ready for operation. [See Texas Roads (Electric)], July 12, p. 81.

GRAND TRUNK.—The Southern New England is surveying a line from the Central Vermont westward to Holyoke, Mass., about 15 miles.

Surveyors for the line from New Hampshire southward to Boston, Mass., are now engaged under the direction of George M. Thompson in running a line through the towns of Dunstable, Tyngsboro, Lowell, Billerica, Bedford, Lexington and Arlington. (June 14, p. 1364.)

GRAND TRUNK PACIFIC.—The Pacific Great Eastern recently started a fifth surveying party out of Vancouver, B. C., to the section southwest of Lillooet, B. C., which is said to be the roughest district through which the line is to be built. Surveys are also being made west of West Vancouver and northeast of Newport, at the head of Howe sound. The plans call for building from Vancouver north to the Grand Trunk Pacific at Fort George, about 350 miles. J. W. Stewart, of Foley, Welch & Stewart, St. Paul, Minn., may be addressed. (August 2, p. 229.)

According to press reports, work has been started on a 22-mile line from a connection with the Great Northern, at Niobe, N. Dak., to a point on the Canadian boundary 12 miles west of North Portal, Sask., where connection is to be made with the Grand Trunk Pacific.

HUDSON BAY RAILWAY.—Bids are being received until September 12, by L. K. Jones, assistant deputy minister and secretary, Department of Railways & Canals, Ottawa, Ont., for building the Hudson Bay Railway from Split Lake Junction, Keewatin, to the Hudson Bay terminus. Separate bids are wanted for work from Split Lake Junction northeast to Port Nelson, on Hudson bay, about 165 miles, and from Split Lake Junction northeast to Fort Churchill, about 245 miles. J. D. McArthur, Winnipeg, Man., has the contract to build the first section of 185 miles from LePas, Keewatin, northeast, and has recently been given a contract for an additional 68-mile section from Thicket Portage to Split Lake Junction. (July 19, p. 143.)

KANSAS CITY, MEXICO & ORIENT.—According to press reports, a contract has been given to M. A. Wogan, for grading work on the section between Fort Stockton, Tex., and Alpine. The track laying is to be carried out by the company's men. W. W. Colpitts, chief engineer, Kansas City, Mo. (July 12, p. 81.)

KANSAS, OKLAHOMA & SOUTHWESTERN.—See Cherryvale, Oklahoma & Texas.

LAKE ERIE & NORTHERN (Electric).—An officer writes that contracts are to be let about September 15. The plans call for building from Brantford, Ont., to Port Dover, and to Galt. The cut and fill work will average 20,000 cu. yds. a mile. The maximum grades will be 1 per cent., maximum curvature 6 deg. There will be one steel bridge 450 ft. long, and another 438 ft. long. The company expects to develop traffic in coal, metals, agricultural machinery and agricultural products. John Muir, president; W. P. Kellett, chief engineer, Brantford. (June 14, p. 1365.)

MANISTEE & REPTON.—An officer of this company, which operates a line from Manistee Junction, Ala., west to Manistee, 19 miles, writes that the company has finished work on a 4½-mile line north to Monroeville, and the line is now open for freight business. J. A. Kauffman, vice-president and general manager, Manistee.

MASSACHUSETTS ROADS (ELECTRIC).—According to press reports, work is to be pushed on the line building from a connection with the Berkshire Street Railway at Lee, Mass., southeast to a connection with the Springfield Street Railway Company at Huntington, 27 miles. The Western Massachusetts Construction Company has the contract, and has sublet some of the work to Carter & Company. It is planned to finish the work by January 1, 1913.

MOUNT IDA, OUACHITA VALLEY & HOT SPRINGS.—According to press reports, construction work is to be started at once on a line to connect Mount Ida, Ark., with Womble, 12 miles. Dr. G. Cox is president, and C. C. Godman, Forth Smith, Ark., is interested.

NEW MEXICO CENTRAL.—Regarding the reports that the branch to be built under the name of the Albuquerque Eastern is to be completed at an early date from Moriarty, N. Mex., west to Albuquerque, about 45 miles; an officer writes that the New Mexico Central being still in the hands of a receiver, it has not been decided when action will be taken to carry out this work. H. A. Coomer, general manager, Santa Fe, N. Mex.

NEW YORK SUBWAYS.—Bids for the construction of four additional sections of the new rapid transit system have been asked by the New York Public Service Commission, First district, bids to be opened on September 10, 11, 12 and 13. The cost of these sections will probably be about $10,000,000. The four sections include one section in Manhattan, one in the Bronx and two in Brooklyn. The Manhattan section is in the southern part of Manhattan, and will connect the proposed East river tunnel with the Broadway subway, to be operated by the Brooklyn Rapid Transit Company. The Bronx section is in 138th street and Southern Boulevard, and forms the first part of the Pelham bay branch of the Lexington avenue subway, which will be operated by the Interborough. The two Brooklyn sections are an extension of the Fourth avenue subway in Brooklyn from Forty-third street down Fourth avenue to Eighty-ninth street. These will be operated by the Brooklyn Rapid Transit Company. (August 9, p. 271.)

OREGON ROADS.—The Silver Falls Lumber Company, Portland, Ore., has given a contract to Flagg & Standifer, Portland, to build a 25-mile logging line from Silverton, Ore., southeasterly.

PACIFIC GREAT EASTERN.—See Grand Trunk Pacific.

SHELBYVILLE & FRANKFORT (Electric).—An officer writes that the prospects of building are good. The projected route is from Shelbyville, Ky., east via Clay Village, Graefenburg and Bridgeport to Frankfort, about 25 miles. There will be two 200-ft. steel bridges. E. H. Taylor, Jr., president, Frankfort, and Rowland Cox, chief engineer, Taylorville.

SOUTHERN NEW ENGLAND.—See Grand Trunk.

TENNESSEE NORTHEASTERN.—This company, which was incorporated several years ago to build 80 miles of line in Tennessee, is planning to sell $750,000 of bonds. The original plans call for building from Winfield, Tenn., on the Cincinnati, New Orleans & Texas Pacific, southwest through Scott, Fentress, Cumberland and White counties, to a point on the Nashville, Chattanooga, & St. Louis, near Ravenscroft, about 80 miles. The line will open up coal and timber sections. D. L. Fickes, president, Scranton, Pa.; W. R. Case, secretary, Jamestown, Tenn. (See an item under Railway Financial News.)

RAILWAY STRUCTURES.

BRANTFORD, ONT.—See Lake Erie & Northern (Electric) under Railway Construction.

CUMBERLAND, MD.—The Baltimore & Ohio will build a freight house and team track at Cumberland. The freight house will be 37 ft. wide x 150 ft. long, with platform extensions at both ends. The building will have concrete foundations, steel or concrete frame with rolling steel frame doors and slate roof. A contract for this improvement has been given to P. Farrell, of Cincinnati, Ohio. The cost of the work will be about $50,000. New engine terminals will also be built at Cumberland, to include a new 31-stall engine house. In addition there will be a power house 65 ft. x 65 ft., with a radial brick stack 150 ft. high, and a machine shop 70 ft. wide x 142 ft. long. These three buildings will be constructed of brick and steel. A cinder pit 150 ft. long will be built to accommodate engines on two tracks. There will be a reinforced concrete mechanical coaling station, with a storage capacity of 600 tons of coal and serving four tracks, also a frame sand house with a capacity of 300 tons of wet sand and 100 tons of dry sand, and two concrete inspection pits, 30 ft. long, as well as a new tank sewer with numerous branches furnishing a new water supply system. The total cost of the engine terminals will be about $500,000.

ELLWOOD CITY, PA.—The new union station which is nearing completion at Ellwood City, will be used jointly by the Baltimore & Ohio and the Pittsburgh & Lake Erie. The building is 100 ft. long x 26 ft. wide, constructed of pressed brick with red tile roof, with concrete foundations. It was necessary to change the grade of Fifth street, which formerly crossed the tracks at grade. This street will now run beneath the tracks. The improvements will cost about $75,000.

GRAND FORKS, B. C.—The Canadian Pacific and the Kettle Valley are preparing plans for a joint passenger terminal, machine shops and 10-stall roundhouse.

HARLINGEN, TEX.—The St. Louis & San Francisco is preparing to erect a new passenger depot and freight station and to make several improvements to its freight yard facilities.

JERSEY CITY, N. J.—The Central of New Jersey has given a contract to G. B. Spearin. New York, for putting up a creosoted pile pier, 65 ft. x 800 ft., at Jersey City, to cost about $100,000.

KALAMAZOO, MICH.—The Grand Rapids & Indiana will build a new roundhouse and an addition to its freight house.

MAGNA, UTAH.—See Bingham & Garfield, under Railway Construction.

MEMPHIS, TENN.—The Illinois Central is conducting negotiations with the city officials at Memphis regarding plans for the new union station to be built by the Illinois Central and to be used also by the Chicago Rock Island & Pacific and St. Louis & San Francisco.

NEW MARTINSVILLE, W. VA.—See Clarksburg Northern under Railway Construction.

NEW ORLEANS, LA.—According to press reports, the St. Louis & San Francisco has given a contract to W. M. Wren, New Orleans, for some of the work on slips, piers, etc., at Chalmette.

PEMBROKE, ONT.—A by-law has been passed at Pembroke granting to the Canadian Northern a bonus of $25,000, exemption from taxation, and free water for a period of 25 years. The railway company has agreed to make Pembroke a divisional point and to put up shops at that place.

PENSACOLA, FLA.—An officer of the Georgia, Florida & Alabama writes that bids will be opened in about 30 days to put up a freight house in Pensacola. The building is to be of brick and concrete construction, one story high, 40 ft. wide x 110 ft. long.

PITTSBURGH, PA.—The Baltimore & Ohio has given a contract to W. F. Trimble & Son, Pittsburgh, Pa., to extend its railway sheds at Pittsburgh. Three sheds will be built, 300 ft. long x 18 ft. wide. The cost of this improvement will be $10,000.

RICHMOND, VA.—Bids are wanted by Nolan & Baskerville, architects, Richmond, for a brick station and office building 38 ft. x 115 ft., to be two stories high. The building is to be built at Twenty-ninth and P streets, Richmond, for the Richmond & Rappahannock River. The improvements will cost about $20,000.

SHELBYVILLE, KY.—See Shelbyville & Frankfort (Electric) under Railway Construction.

TUSCALOOSA, ALA.—An officer of the Tuscaloosa Mineral writes that a contract has been given to A. M. Walkup, Richmond, Va., for putting up a passenger station at Tuscaloosa street and 24th avenue, Tuscaloosa. The building is to be 40 ft. high, 30 ft. wide x 168 ft. long. It will be built of pressed brick with tile roof.

TWENTY-FOUR O'CLOCK SYSTEM ON THE CONTINENT.—At present the time tables of the Belgian, Italian, Spanish and French railways show times from 1 to 24 o'clock.

CHILEAN GOVERNMENT RAILWAY STATISTICS.—In 1901 the Chilean government railways had in use 292 locomotives, 4,057 freight cars, and 323 passenger coaches, while in 1911 the numbers were 633 locomotives, 7.194 freight cars, and 452 passenger coaches. The receipts of the lines increased in the decade from $5,360,520, to $11,513,040, while the operating expenses increased from $6,177,270 to $14,132,078.

COAL SHORTAGE IN CHILE.—Owing to a shortage of coal, many of the Chilean government railway trains have been temporarily suspended. This comes as a result of the late coal strike in England, from which country about 500,000 tons of coal are imported into Chile annually. In 1904 the Chilean government railways consumed 241,629 tons of Chilean coal, against 12,707 tons of imported coal, while during 1911 they consumed 403,050 tons of Chilean coal, against 116,209 tons of imported coal. During 1910 they consumed 222,725 tons of Chilean coal, against 267,,211 tons of imported coal.

Railway Financial News.

CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS.—The Ohio Public Service Commission has authorized the company to issue $1,578,000 of its own bonds and to have its subsidiary, the Cincinnati Northern, issue $144,000 bonds. The bonds are to be sold at not less than 92 for the C. C. C. & St. L., and 90 for the C. N.

COLUMBUS CONNECTING & TERMINAL.—See Norfolk & Western.

KANSAS CITY OUTER BELT & ELEVATED.—This company, whose property was to form the Kansas City, Mexico & Orient's Kansas City terminal, has outstanding $1,788,000 bonds, which the bondholders' protective committee, John W. Platten, chairman, asks the deposit of with the United States Mortgage & Trust Company, New York.

KANSAS CITY, MEXICO & ORIENT.—See Kansas City Outer Belt & Elevated.

NORFOLK SOUTHERN.—Suit has been brought in the superior court of Wake county, N. C., to enjoin the making of a mortgage for $6,000,000 to secure bonds or notes to be issued to retire the 3-year 6 per cent. notes, of which $5,425,000 were issued to acquire the Raleigh, Charlotte & Southern, and to make certain extensions.

NORFOLK & WESTERN.—At the annual meeting of the stockholders, to be held October 10, the proposal will be submitted to buy the property of the Columbus Connecting & Terminal, which corporation the Norfolk & Western controls.

PERE MARQUETTE.—Newman Erb has resigned as a receiver, as mentioned last week, and Samuel M. Felton, president of the Chicago Great Western, has been appointed a receiver to succeed Mr. Erb; he retains his position on the C. G. W. The three receivers are now S. M. Felton, Frank W. Blair and Dudley E. Waters.

TENNESSEE NORTHEASTERN.—This company, mentioned in Railway Construction, is making preparations to offer in France $750,000 first mortgage 5 per cent. bonds of 1909-1949.

SECURING RAILWAY CONCESSIONS IN RUSSIA.—In order to secure a concession for the construction of a railway in Russia it is required: To apply to the minister of railways and means of communication with a request to obtain the imperial order for the making of investigations and surveys of the proposed railway line. Upon completion of investigations and surveys, to apply to the minister of railways with a petition requesting the granting of the concession. To this petition are to be attached detailed technical, economical, and financial investigations and surveys, drawings, statements of freight traffic, and the cost of the railway. In the same petition request is made for sanction to submit a bond, the size of which is left to the discretion of the minister. The whole is then turned over to the commission on new railways If the construction of such road be recognized by the commission as necessary and feasible, then the commission on new railways will transmit the whole case to the council of ministers, which reviews the case anew both as to the findings of the commission and as to the documents submitted by the concessionaires. It is necessary to have one's own special representative present before the commission on new railways to give information upon the proposition submitted and to defend the practicability of the same. From the council of ministers the whole case is then turned over to the second department of the imperial council, which ratifies and confirms the concession for the given person or group of persons. When the concession is received and the second department of the imperial council permitted to form and organize a new association or company for the construction of the railway, it is then the proper time to apply to the minister of finance, with whom negotiations are conducted about the issue of stock, the guarantees of the government, and when the capital shall be collected and deposited. Ordinarily the capital must be deposited in the government bank, at specified periods, and from there it is received, in portions, by the association or company. If there arise differences of opinion in the council of ministers an interdepartmental commission is formed to review the whole matter.—*Consular Report.*

ANNUAL REPORT

LEHIGH VALLEY RAILROAD COMPANY—FIFTY-EIGHTH ANNUAL REPORT.

PHILADELPHIA, AUGUST 19, 1912.

To the Stockholders of the
LEHIGH VALLEY RAILROAD COMPANY.

The Board of Directors herewith submit the annual report of the business and condition of your Company for the fiscal year ended June 30, 1912.

MILEAGE.

The first track mileage owned or controlled and operated by the Lehigh Valley Railroad Company, the main line of which is double track, extending from Jersey City, N. J., to Buffalo and Suspension Bridge, N. Y., is as follows:—

	MILES.
Lehigh Valley Railroad Company	311.00
Controlled by ownership of entire capital stock	936.79
Controlled by ownership of majority of capital stock and lease	115.37
Operated under lease	27.73
Total mileage operated (owned or controlled)	1,390.89
Trackage rights over railroads owned by other companies	63.05
Total first track mileage	1,453.94

In addition to the above, there are 605.89 miles, or 41.67 per cent., of second track, 73.27 miles of third track, 37.58 miles of fourth track and 1,173.67 miles of yard tracks and sidings, a total of 3,344.35 miles of track in operation at the close of the year. A detailed statement of track mileage is shown on pages 45 to 47. The average number of miles of railway operated for the year was 1,440.72, upon which the mileage statistics in certain tables submitted in this report are based.

The increase of 24.25 miles of first track is due to the construction of additional track during the year and to the acquirement of further trackage rights from other companies.

OPERATING REVENUES AND EXPENSES.

The gross revenues and expenses and net revenue from the operation of the entire system for the fiscal year, not including other income, compared with similar figures for the fiscal year 1911, are shown below. The complete income account appears on page 22.

GROSS OPERATING REVENUES.

FROM	1912.	1911.	INCREASE OR DECREASE.
Coal freight	$16,301,316.24	$17,155,534.15	—$854,217.91
Merchandise freight	14,591,239.56	14,687,291.27	—96,051.71
Passenger	4,703,733.52	4,568,029.75	135,703.77
Mail	191,703.74	190,760.08	943.66
Express	471,957.22	453,819.83	18,137.39
Other transportation	379,919.42	360,717.36	19,202.06
Miscellaneous	266,065.51	271,250.55	—5,185.04
Total operating revenues	$36,905,935.21	$37,687,402.99	—$781,467.78

OPERATING EXPENSES.

	1912.	1911.	INCREASE OR DECREASE.
Maintenance of way and structures	$3,963,589.12	$3,620,176.26	$343,412.86
Maintenance of equipment	6,313,316.76	6,003,286.95	310,029.81
Traffic expenses	980,116.82	1,010,675.41	—30,558.59
Transportation expenses	12,606,961.58	11,979,278.24	627,683.34
General expenses	856,265.53	793,901.50	62,364.03
Total operating expenses	$24,720,249.81	$23,407,318.36	$1,312,931.45
NET OPERATING REVENUE	$12,185,685.40	$14,280,084.63	—$2,094,399.23
Ratio of operating expenses to operating revenues	66.98%	62.11%	4.87%

OPERATING REVENUES.

COAL FREIGHT.

The revenue derived from the transportation of coal and coke was $16,301,316.24, a decrease of $854,217.91, or 4.98 per cent., as compared with the preceding twelve months. This decrease is due entirely to the suspension of anthracite mining during the months of April and May.

The percentage of coal freight revenue to total operating revenues was 44.17 per cent., a decrease of 1.35 per cent.

The coal and coke transported, excluding the Company's supply coal, was 15,166,853 tons, a decrease of 422,897 tons, or 2.71 per cent.

The number of tons moved one mile was 2,313,939,406, a decrease of 55,600,923 ton miles, or 2.35 per cent.

The average haul was 152.57 miles, an increase of .58 mile, or .38 per cent.

This class of tonnage was 54.14 per cent. of the total tonnage hauled during the year, a decrease of .54 per cent.

MERCHANDISE FREIGHT.

The transportation of merchandise freight produced a revenue of $14,591,239.56, a decrease of $96,051.71, or .65 per cent., as compared with the preceding year.

The percentage of revenue derived from the transportation of merchandise freight was 39.54 per cent. of the total operating revenues, an increase of .57 per cent.

The tonnage moved, excluding Company's material, was 12,846,447 tons, a decrease of 76,115 tons, or .59 per cent.

The number of tons carried one mile was 2,471,137,980, a decrease of 43,527,888 ton miles, or 1.73 per cent.

The average haul was 192.36 miles, a decrease of 2.23 miles, or 1.15 per cent.

GENERAL FREIGHT.

The total revenue from both coal and merchandise freight was $30,892,555.80, a decrease of $950,269.62, or 2.98 per cent., as compared with the preceding twelve months.

The entire freight traffic amounted to 28,013,300 tons, a decrease of 499,012 tons, or 1.75 per cent.

The number of tons carried one mile was 4,785,077,386, a decrease of 99,128,811 ton miles, or 2.03 per cent.

The average haul was 170.81 miles, a decrease of .49 miles, or .29 per cent.

The average revenue per ton was 110.28 cents, as compared with 111.68 cents last year, a decrease of 1.40 cents, or 1.25 per cent.

Company's freight, not included in the above, amounted to 2,944,379 tons, a decrease of 52,233 tons, or 1.74 per cent.

The total freight train mileage was 8,452,978 miles, a decrease of 522,992 miles, or 5.83 per cent.

The revenue received per freight train mile was $3.65, an increase of $0.10, or 2.82 per cent.

The average trainload of revenue freight was 566.08 tons, an increase of 21.94 tons, or 4.03 per cent. Including Company's freight, the average trainload was 587.51 tons, an increase of 23.07 tons, or 4.09 per cent.

PASSENGER.

The receipts from passenger traffic amounted to $4,703,733.52, an increase of $135,703.77, or 2.97 per cent., over the preceding year.

The total number of passengers carried was 5,349,848, a decrease of 9,906, or .18 per cent.

The number of passengers carried one mile increased 7,034,010, or 2.73 per cent.

The average revenue per passenger was 87.92 cents, an increase of 2.69 cents, or 3.16 per cent.

The average revenue per passenger per mile was 1.775 cents, an increase of .004 cent, or .23 per cent.

The average distance traveled by each passenger was 49.53 miles, an increase of 1.40 miles, or 2.91 per cent.

Passenger train mileage was 4,523,420, an increase of 75,371 miles, or 1.69 per cent., as compared with an increase in this revenue of 2.97 per cent.

The average revenue from passengers per passenger train mile was 103.99 cents, an increase of 1.29 cents, or 1.26 per cent.

MAIL.

The compensation received from the Federal Government for the transportation of United States mails was $191,703.74, an increase of $943.66.

EXPRESS.

The revenue from this class of business amounted to $471,957.22, an increase of $18,137.39.

OTHER TRANSPORTATION.

The earnings derived from transportation other than shown under the preceding headings were $379,919.42, an increase of $19,202.06.

MISCELLANEOUS.

Miscellaneous revenue amounted to $266,065.51, a decrease of $5,185.04.

OPERATING EXPENSES.

MAINTENANCE OF WAY.

The sum of $3,963,589.12 was expended during he year for the maintenance of way and structures, an increase of $343,412.86, or 9.49 per cent., over the preceding year.

Four steel bridges, one concrete-steel bridge and one wooden bridge were built in connection with additional track construction. Seventeen steel bridges and nine concrete-steel bridges were placed in the track, replacing light steel or wooden bridges. Ten steel bridges were strengthened and one steel bridge extended. Twenty-one bridges were replaced by culverts and two small bridges were abandoned and the openings filled. One wooden highway bridge was replaced by a steel structure and one light steel highway bridge was replaced by a heavier steel bridge.

12,233 tons of 110-pound rail, 15,817 tons of 100-pound rail and 5,805 tons of 90-pound rail, together with necessary frogs, switches, etc., were placed in the track.

919,068 tie plates and 534,228 anti rail creepers were used.

614,737 cross ties, 2,289,166 feet B. M. switch ties, 917,051 feet B. M. bridge ties and lumber amounting to 5,155,206 feet B. M. were used.

306,501 of the cross ties, 1,088,328 feet B. M. of switch ties and 709,824 feet B. M. of bridge ties were treated with creosote.

111,927 cubic yards of crushed stone were used in ballasting track.

71,396 feet of drain tile were placed in the roadbed.

17.54 miles of new telegraph and telephone pole line were erected, 140.59 miles rebuilt and 53.60 miles reset. 930.79 miles of copper and 48.20 miles of iron wire were used in extending and renewing the telephone, telegraph and signal wires on the system.

MAINTENANCE OF EQUIPMENT.

Charges amounting to $6,313,316.76 were made for the maintenance of equipment, an increase of $310,029.81, or 5.16 per cent., over the previous twelve months. As required in the classification of accounts prescribed by the Interstate Commerce Commission, there is included in this amount a charge of $1,102,502.92 for depreciation of equipment.

The following new equipment has been added to the property and charged to Capital Account during the year: Ten freight locomotives, twenty-five switching locomotives, forty-six steel passenger coaches, twenty steel smoking cars, two steel dining cars, two steel library cars, ten steel combined passenger and baggage cars, fifteen steel combined baggage and mail cars, twenty-five steel baggage and express cars, three steel postal cars, twenty steel underframe milk cars, three caboose cars, two steam wrecking cranes, four locomotive cranes, twelve steel underframe pneumatic air-dump cars and one unloader.

In addition to the foregoing, orders have been placed for twenty-two additional freight locomotives, three combined passenger and baggage cars, one thousand steel underframe refrigerator cars and two locomotive cranes.

Twenty-two passenger coaches, three combined passenger and baggage cars and one combined baggage and mail car were converted into workmen's cars. Ten freight equipment cars were transferred to road service.

Nineteen worn-out locomotives, twelve passenger coaches, six combined passenger and baggage cars, four milk cars, 226 freight equipment cars and 127 road service cars were condemned and either sold or destroyed during the year and their value written off the books by appropriate charges through operating expenses.

671 locomotives received heavy and general repairs.

One dining car was rebuilt, 431 passenger equipment cars received heavy repairs, 369 were painted and varnished and nine equipped with electric lights. Steel underframes were applied to 2,438 wooden freight cars, making a total of 7,631 cars so equipped during the last four years. 20,467 freight equipment cars received heavy and general repairs.

The total number of locomotives on hand at the close of the year was 903 with a tractive power of 25,734,655 pounds. The total number of freight equipment was 43,750 with a capacity of 1,584,692 tons.

TRAFFIC EXPENSES.

This class of expenses amounted to $980,116.82, a decrease of $30,558.59 as compared with the previous twelve months.

TRANSPORTATION EXPENSES.

The total cost of conducting transportation was $12,606,961.58, an increase of $627,683.34, or 5.24 per cent., over the preceding year.

The ratio of transportation expenses to total operating revenues was 34.16 per cent., as compared with 31.79 per cent. last year, an increase of 2.37 per cent.

GENERAL EXPENSES.

This item amounted to $856,265.53, or 2.32 per cent. of the total operating revenues.

TAXES.

The taxes accrued on your property, capital and business during the year amounted to $1,451,311.17, which is an increase of $305,834.48 over the preceding year. The continuing increase in taxes has become a serious matter, the taxes for the year having reached an amount equivalent to 3.93 per cent. of the Company's revenues.

ADDITIONS AND BETTERMENTS.

The policy of making liberal appropriations for additions and betterments to the property has been continued, the expenditures on that account for the year amounting to $3,869,006.89. A classification of the same, in the form prescribed by the Interstate Commerce Commission, is given on page 42.

The Hays Creek Branch, which extends from Ashmore to White Haven, referred to in the last annual report, was completed and placed in operation on December 26, 1911. The double tracking of the line from Laurel Junction to Silver Brook Junction, made necessary by the construction of the Hays Creek Branch, was also completed during the year. These improvements provide a shorter route with better alinement and easier grades and permit more prompt and efficient handling of cars in a region of great traffic density.

The third and fourth track extension from Cementon to Treichlers, a distance of 4.18 miles, was completed, making a continuous four-track line of 23.79 miles in the congested territory on the New Jersey and Lehigh Division.

141,187 feet, or 26.74 miles, of Company's sidings and 25,608 feet, or 4.85 miles, of industrial sidings were constructed during the year.

The westbound passing siding near Tunkhannock has been lengthened a distance of 1.63 miles and the westbound siding at Towanda 1,388 feet. These siding extensions are made necessary to accommodate the greater number of cars now hauled in freight trains.

For the interchange of business and the accommodation of various industries additional tracks were installed at Perth Amboy, with 183 cars capacity, and at Van Etten, with sixty-seven cars capacity. New tracks with a capacity of 200 cars are now being laid at Florence. The local freight yards at Wilkes-Barre and Greenville were remodelled, driveways extended and paved and additional team tracks installed.

A yard of 340 cars capacity for receiving and classifying coal was constructed at Throop, which has eliminated the congestion in the movement of coal freight consigned to Auburn and points north.

To provide adequate facilities for the trans-shipment of coal from cars to vessels at Perth Amboy and to avoid the rebuilding of a dump trestle and pier, a modern car dumping plant of 1,500,000 tons annual capacity is now being installed. In connection with this work, the yard tracks are being re-arranged to permit of greater efficiency in the handling of cars at that point and the vessel berthing space is being widened as well.

A reinforced concrete grain storage elevator of 446,000 bushels capacity, for facilities for drying, cleaning, clipping and bagging, is in course of construction at National Stores, New York Harbor.

Combination freight and passenger stations, of hollow tile and stucco construction, were built at Meshoppen, Cementon and Fullerton. A frame freight station was erected at Roselle Park. A pier and steel bulkhead shed were built at Pier 5, Wallabout Basin, Brooklyn. Additions were made to the freight stations at Scott Street, Buffalo, and East 124th Street, New York City.

A ten-ton electrically operated transfer crane was installed at West 27th Street Yard, New York City; the freight transfer crane at Wilkes-Barre equipped with an electric motor; a thirty-ton electrically operated transfer crane erected at Grand Street, Jersey City, replacing a twenty-ton hand operated crane, which was transferred to Perth Amboy, and a twenty-ton hand operated crane erected at Ithaca.

Car repair sheds were built over the tracks at the easterly end of the car shop at Packerton, providing additional capacity for the repair of cars.

At Perth Amboy the fuel coal trestle was remodelled, a concrete ash pit constructed and a locomotive crane provided for handling the fuel and ashes. The capacity of the gravity fuel coal trestle at Sayre was increased.

Twenty-six gasolene motor cars were purchased for the use of section and bridge gangs, replacing hand cars and enabling a reduction in the number of section forces.

New steel water tanks of 40,000 gallons capacity each were erected at Glendon, Sayre and Phillipsburg, and a water tank of 50,000 gallons capacity was erected near Jeanesville. At Manchester additional water storage was provided by the rection of two 100,000-gallon steel tanks and the steam pumping plant replaced with an electric pump.

The interlocking plant at South Plainfield, consisting of fifty-six levers, was replaced with an electric plant of thirty-two levers. A mechanical interlocking plant of twelve levers was installed at Eckley Junction, and the Jeddo tunnel signals, which were rebuilt, are now operated from this plant. A three-party interlocking plant was placed at Mortimer where the West Shore Railroad and Erie Railroad cross the tracks of this Company.

Upper-quadrant three-position automatic semaphore signals were installed between Gum Run and Laurel Junction, a distance of 20.6 miles, and at Ashmore Junction. Similar signals were also installed on the four-track extension from Cementon to Treichlers, and the disc signals on first and second track replaced with upper-quadrant signals. This completes the automatic signalling on the four-track system. An electric staff system was installed on the New Boston Branch between Laurel Junction and New Boston Junction. The installation of upper-quadrant automatic signals on the easterly end of the main line, replacing disc signals, has been completed to South Somerville. The use of oil lights on the automatic signals between Parkview and Port Reading Junction, and on the Mahanoy and Hazleton Division has been discontinued and replaced with acetylene gas.

Telephone train dispatching lines were completed between Sayre and Manchester and on the Naples, Seneca Falls and Ithaca Branches and the train dispatching telephone line between Manchester and Buffalo is practically completed. 397 portable telephone sets have been installed in passenger and freight trains.

The telegraph and telephone pole line on the Buffalo Division was rebuilt for a distance of eighty-seven miles, and reset on the Elmira and Cortland, Auburn and Ithaca, and Seneca Falls Branches for a distance of 53.6 miles.

The constantly increasing weight and capacity of rolling stock has made it necessary to increase the standard weight of rails on the main line from 90 pounds to 100 pounds per yard on tangents and 110 pounds per yard on curves and in tunnels.

FINANCIAL.

No new financing has been undertaken by the Company during the year. The resources have been ample for all capital expenditures.

As provided in the respective mortgage and deeds of trust $1,000,000 Collateral Trust Four Per Cent. Bonds, which matured in August and February, $500,000 Equipment Trust J Certificates, which matured in September and March, and $400,000 Equipment Trust I Certificates, held in the treasury, which matured in September, a total of $1,900,000, were retired during the year. In addition, your Company purchased and placed in its treasury $296,600 par value, preferred stock and $285,100 par value, consolidated stock of the Morris Canal and Banking Company, on which dividends are guaranteed at the rates of ten and four per cent. per annum, respectively. The retirement or purchase of these obligations will result in a reduction of $85,164 per annum in the fixed charges of your Company.

In January The Lehigh Valley Coal Company, which has, since its incorporation, been engaged in the mining, shipping and selling of anthracite coal, caused to be organized a new company with the name Lehigh Valley Coal Sales Company, for the purpose of purchasing at the mines and shipping and selling all coal which it mined and purchased. The new company was created with an authorized capital stock of $10,000,000, of which $6,060,800, or 121,216 shares, with a par value of $50 each, were immediately issued and the balance reserved for future needs. The privilege was accorded stockholders of the Lehigh Valley Railroad Company of subscribing to stock of the Sales Company for an amount equivalent to ten per cent. of their holdings. The Sales Company formally commenced business March 1, 1912. Neither the Lehigh Valley Railroad Company nor The Lehigh Valley Coal Company has any ownership in the stock of the Sales Company or any interest, direct or indirect. in the coal transported.

The certificates of indebtedness of The Lehigh Valley Coal Company, amounting to $10,537,000, issued by that Company to the Lehigh Valley Railroad Company some years ago to represent its indebtedness for advances made to it for capital expenditures, were redeemed on March 1st. The Lehigh Valley Coal Company paid off $3,037,000 of the same in cash at par and, in exchange for the balance, issued $7,500,000 Fifty-Year Gold Debenture Obligations, bearing interest at the rate of four per cent. per annum, payable semi-annually on the first days of March and September. These debentures were deposited with the Trustee of the General Consolidated Mortgage, the certificates of indebtednss having been so held. The Lehigh Valley Coal Company further paid all arrearages of interest on the certificates of indebtedness up to March 1, 1912. The amount applying prior to the present fiscal year was credited to Profit and Loss and the balance, $280,986.67, was included in the Income of the present year. In addition, the Income Account of the Lehigh Valley Railroad Company is being credited with interest on the $7,500,000 Debentures as the same accrues and is paid by the Coal Company.

Various subsidiary companies owned by the Lehigh Valley Railroad Company, to which cash advances were made during the year for expenditures to cover additions and betterments to their respective properties, have reimbursed your Company by the issuance of Five Per Cent. Debenture Bonds, as follows: The Lehigh Valley Rail Way Company, $324,000; Pennsylvania and New York Canal and Railroad Company, $203,500; Lehigh Valley Transportation Company, $67,000; Lehigh Valley Railroad Company of New Jersey, $61,500; National Storage Company, $60,000; The Schuylkill and Lehigh Valley Railroad Company, $6,000; Montrose Railroad Company, $5,500, and Loyalsock Railroad Company, $4,500. In addition, $59,000 Five Per Cent. Bonds have been received from the Wyoming Valley Water Supply Company to cover amounts advanced to that Company for capital purposes during the year. All these several securities have either been placed in the treasury or deposited under the General Consolidated Mortgage, as required thereby.

Seven shares of the Company's capital stock, carried as a treasury asset, were sold. This stock came into the possession of the Company in 1874 as a result of the fraudulent raising of certain certificates for one share each, concerning which a suit was brought against the Company. This suit was settled for a nominal sum, which obviated the necessity of any further retention of the stock mentioned.

The Elmira Transfer Railway Company, a corporation organized in 1885 for the purpose of acquiring certain terminal right of way in the City of Elmira New York, was dissolved, the necessity for maintaining that corporation no longer existing. The entire capital stock with a par value of $10,000, all of which was owned by your Company, has been cancelled and written off the books.

In the past it has not been customary to deduct from Profit and Loss Account until actually due the dividends declared in June and disbursed in the following month. Commencing with the present fiscal year, however, this practice has been changed and it will be noted that Profit and Loss Account has been charged with the dividends declared in June and due July 13, 1912, this being more in line with proper accounting methods.

To provide fully for such depreciation as may have resulted from mining from the property of Coxe Brothers & Company, Incorporated, the entire capital stock of which is owned by the Lehigh Valley Railroad Company, the book value thereof was reduced by $1,000,000, which amount was charged to Profit and Loss. A similar reduction was made in the book value of this property in each of the four preceding years.

Materials and supplies on hand at the close of the year amounted to $2,535,142.83, a decrease of $323,431.19.

The advances to subsidiary real estate companies were increased by $935,919.85 during the year as a result of large purchases of land, principally for terminal improvements and extensions.

Working Assets are $35,134,859.07 in excess of Working Liabilities.

Semi-annual dividends of five per cent. each were declared in December, 1911, and June, 1912, on the common and preferred capital stock of the Company, payable respectively in January and July, 1912. In addition, a special dividend of ten per cent. was declared out of the accumulated surplus of the Company, payable February 26, 1912.

Certified public accountants have examined and verified the cash balance, securities and the accounts of the Company for the fiscal year and have furnished a certificate as to the correctness thereof, a copy of which is submitted on page 17.

GENERAL REMARKS.

The revenues for the year were seriously affected by the suspension of mining in the anthracite region where, pending negotiations for a new agreement between the mining companies and their employes, no coal was mined and shipped for a period of about eight weeks. The temporary discontinuance of shipments of this one commodity, the earnings from which approximate 40.97 per cent. of the revenue, and the manifest impossibility of reducing expenses proportionately, more than account for the reduction in the net operating revenue for the year. In addition, the

necessity of maintaining the high standard of service required by shippers and the public generally, the continuing increases in rates of wages, the high cost of fuel and the severity of the winter have greatly increased the expenses. The property has, however, been fully maintained; in fact, the charges for maintenance show a moderate increase over the previous year.

Attention was called in the last annual report to the status of the lease of the property of the Morris Canal and Banking Company and to the efforts that were being made to secure the necessary legislation to permit the abandonment of navigation on the canal and the disposition of its property. The Commission appointed by the Legislature of New Jersey in 1911, completed its work and recommended the enactment of a bill, which they presented, for abandonment of the canal and repeal of the charter. Many hearings were held on the subject but the bill, after much discussion, failed to obtain favorable action by the Legislature. Just prior to its adjournment in March of the present year, however, a resolution was adopted by both houses of the Legislature referring the whole matter to a new Commission of twelve persons, four of whom were appointed by the President of the Senate, four by the Speaker of the House of Assembly, and four by the Governor, who are to report at the earliest possible date, with the end in view that a special session of the Legislature may be called, if necessary, to act upon this important subject. It is hoped that future action of the Legislature will be such as to permit the abandonment of navigation and effect a satisfactory disposition of the property. These proceedings coming to the attention of the stockholders of the Morris Canal and Banking Company, many of them desired to dispose of their stock and requested the Lehigh Valley Railroad Company to purchase the same. Your Board, after due consideration, deemed it both just and wise to purchase such of the outstanding stock of the Morris Canal and Banking Company as the stockholders desired to sell. Accordingly a circular was addressed to each stockholder offering to purchase their holdings at the price of $170 per share for the preferred stock and $70 per share for the consolidated stock, upon which the Lehigh Valley Railroad Company guaranteed and has been paying dividends at the rates of ten and four per cent. per annum respectively. A considerable number of the stockholders accepted the offer, with the result that your Company is now the owner of a large majority of the outstanding stock of the Canal Company.

To provide land for the construction of a new passenger station in the City of Buffalo, the Company acquired, under an agreement, dated February 5, 1912, between the City of Buffalo and The Lehigh Valley Rail Way Company, the so-called "Hamburg Canal Strip," extending from Main Street to Alabama Street, for a consideration of $500,000. A part of this land, not needed for the purpose mentioned, will be sold to another railroad company. The agreement with the City of Buffalo, under which the land was purchased, requires the construction of the passenger station within a specified time and the elimination of certain grade crossings. Plans and specifications for the development of this terminal are being prepared.

For use in defending certain actions pending against your Company in the matter of freight rates, a valuation is being made of the physical property of the Company, an appropriation having been made from Profit and Loss Account to cover the expense of the same, as shown in that statement.

There have been no new developments respecting the Lehigh and New York Railroad, which was leased by your Company in 1895, the year's operation resulting in a loss of $141,345.34.

Ample expenditures have been made for the maintenance of the floating equipment of the Lehigh Valley Transportation Company, the entire capital stock of which is owned by your Company. One steel tug, six steel barges and two wooden barges were purchased and received during the year. Two tugs and eight barges, unfit for further service, were condemned and sold or otherwise disposed of. The floating equipment used by your Company and its affiliated companies is set forth in detail on page 44.

During the year fifty-eight new industries were located on the system, direct track connections having been made with thirty-one thereof. The work of the Company's Agriculturist has produced satisfactory results in the farming districts served by the Company's lines.

56.16 per cent. of the total operating expenses, including outside operations, or $15,472,144.58, was paid direct to labor, being distributed among an average of 21,080 employes during the year.

The Company contributed $54,657.08 to its Employes' Relief Fund, which is an amount equal to the payments made by the employes themselves to that Fund.

Mr. Henry B. Coxe, of Philadelphia, Pennsylvania, was elected a Director to succeed Mr. P. A. B. Widener, who declined re-election.

The Board takes pleasure in expressing its appreciation of the loyal and efficient services rendered by the officers and employes of the Company in the performance of their duties.

E. B. THOMAS,
President.

COMPARATIVE INCOME ACCOUNT FOR THE YEARS ENDED JUNE 30, 1912 AND 1911.

	1912.	1911.	INCREASE OR DECREASE.
OPERATING REVENUES:—			
Coal freight revenue	$16,301,316.24	$17,155,534.15	—$854,217.91
Merchandise freight revenue	14,591,239.56	14,687,291.27	—96,051.71
Passenger revenue	4,703,733.52	4,568,029.75	135,703.77
Mail revenue	191,703.74	190,760.08	943.66
Express revenue	471,957.22	453,819.83	18,137.39
Other transportation revenue	379,919.42	360,717.36	19,202.06
Miscellaneous revenue	266,065.51	271,250.55	—5,185.04
Total operating revenues	$36,905,935.21	$37,687,402.99	—$781,467.78
OPERATING EXPENSES:—			
Maintenance of way and structures	$3,963,589.12	$3,620,176.26	$343,412.86
Maintenance of equipment	6,313,316.76	6,003,286.95	310,029.81
Traffic expenses	980,116.82	1,010,675.41	—30,558.59
Transportation expenses	12,606,961.58	11,979,278.24	627,683.34
General expenses	856,265.53	793,901.50	62,364.03
Total operating expenses	$24,720,249.81	$23,407,318.36	$1,312,931.45
Ratio of operating expenses to operating revenues	66.98%	62.11%	4.87%
Net operating revenue	$12,185,685.40	$14,280,084.63	—$2,094,399.23
OUTSIDE OPERATIONS, NET	*291,239.44	*320,170.33	28,930.89
TOTAL NET REVENUE	$11,894,445.96	$13,959,914.30	—$2,065,468.34
TAXES ACCRUED	1,451,311.17	1,145,476.69	305,834.48
OPERATING INCOME	$10,443,134.79	$12,814,437.61	—$2,371,302.82

*Deficit.

OTHER INCOME:—			
Hire of equipment—Balance	$72,257.51	$90,324.66	—$18,067.15
Joint facilities rents—Credits	316,599.20	244,756.92	71,842.28
Dividends on stocks	654,495.25	584,026.62	70,468.63
Interest on bonds	431,458.67	46,121.00	385,337.67
Miscellaneous income	641,650.75	710,509.42	—68,858.67
Total other income	$2,116,461.38	$1,675,738.62	$440,722.76
TOTAL INCOME	$12,559,596.17	$14,490,176.23	—$1,930,580.06
DEDUCTIONS FROM INCOME:—			
Interest accrued on funded debt	$3,167,635.15	$3,306,268.20	—$138,633.05
Rentals of leased lines and guaranties	2,215,470.00	2,286,103.97	—70,633.97
Joint facilities rents—Debits	222,832.74	228,803.19	—5,970.45
Miscellaneous deductions	140,638.19	168,993.88	—28,355.69
Additions and betterments	340,944.45	980,549.42	—639,604.97
Total deductions from income	$6,087,520.53	$6,970,718.66	—$883,198.13
NET INCOME	$6,472,075.64	$7,519,457.57	—$1,047,381.93

PROFIT AND LOSS ACCOUNT FOR THE YEAR ENDED JUNE 30, 1912.

	Dr.	Cr.
Balance, July 1, 1911		$30,330,647.47
Net income for year ended June 30, 1912		6,472,075.64
Expenditures for Additions and Betterments deducted from Income		340,944.45
Interest paid on certificates of indebtedness of The Lehigh Valley Coal Co., applicable to prior years		2,528,880.00
Miscellaneous adjustments		40,305.90
Appropriation by the Board for valuation of the Company's property	$86,086.67	
Property abandoned	30,063.33	
Reduction of book value of capital stock of Coxe Brothers & Co., Inc.	1,000,000.00	
Dividends:		
Five per cent. on preferred stock, paid July 15, 1911	$5,315.00	
Five per cent. on common stock, paid July 15, 1911	3,025,085.00	
Five per cent. on preferred stock, paid Jan. 13, 1912	5,315.00	
Five per cent. on common stock, paid Jan. 13, 1912	3,025,085.00	
Special ten per cent. on preferred stock, paid Feb. 26, 1912.	10,630.00	
Special ten per cent. on common stock, paid Feb. 26, 1912.	6.050,170.00	
Five per cent. on preferred stock, due July 13, 1912	5,315.00	
Five per cent. on common stock, due July 13, 1912	3,025,085.00	
	15,152.000.00	
Balance, June 30, 1912	23,444,703.46	
	$39,712,853.46	$39,712,853.46
Balance brought forward, July 1, 1912		$23,444,703.46

THE LEHIGH VALLEY COAL COMPANY.

REPORT OF OPERATIONS.

PHILADELPHIA, August 19, 1912.

The Board of Directors submit herewith the annual report of the operations conducted by The Lehigh Valley Coal Company for the fiscal year ended June 30, 1912, and statements showing its financial condition at that time.

The suspension of mining operations for practically both the months of April and May, during which time the Company was deprived of any revenue from its property, naturally made a serious reduction in the year's income. The agreement with the mine workers expired by limitation on the thirty-first day of March and, while negotiations for a new agreement were in progress, the mines remained idle. An agreement was finally reached in the latter part of the month of May, which gave to the mine workers a substantial increase in wages and mining was thereupon promptly resumed.

The total net income of the Company from all sources, after deducting charges for royalties, sinking funds, improvements to the property and interest on the funded debt, amounted to $1,162,241.32, a decrease of $350,603.08, as compared with the previous year.

The total production of anthracite coal from the lands owned, leased and controlled by The Lehigh Valley Coal Company and affiliated companies, including that mined by tenants, was 8,224,317 gross tons, a decrease of 796,889 tons, or 8.83 per cent., as compared with the preceding year.

The percentage of sizes above pea produced by the mining operations of the Company was 67.67 per cent., an increase of 2.10 per cent.

The bituminous coal mined from the Snow Shoe lands amounted to 280,084 gross tons, an increase of 43,154 tons.

To offset in some measure the constantly increasing cost of mining, which is every year becoming more serious, owing to the greater depth and extension of the underground workings, with the attendant increase in the length of the underground haul, heavier expense for pumping and ventilation and legislation adding directly to the cost of operation, it has been necessary to continue making substantial expenditures for improvements and betterments to the property. Expenditures for such purposes during the year, deducted from Income, amounted to $487,456, an increase of $42,779 over the preceding twelve months.

The new Buck Mountain Breaker, referred to in the previous annual report as being under construction, was completed and placed in operation near the close of the fiscal year. It is preparing the coal formerly handled by the old Buck Mountain and Vulcan Breakers, which have been abandoned. The new plant is of fireproof construction and equipped with the most modern machinery and appliances.

The erection of a new washery at Spring Brook for the purpose of reclaiming the culm banks at that locality has also been completed. It has

a capacity of about 700 tons per day and is operated entirely by electric power.

At Westmoreland Colliery the breaker has been practically rebuilt to permit of more economical operation and the better prepartion of coal for market.

The reconstruction of the breaker at Park Place is practically completed, steel pockets, modern machinery and equipment to replace that requiring renewal having been installed. In addition to the tonnage of the old breaker, these improvements enable the handling of the coal formerly prepared at Primrose Colliery, which has been abandoned, the breaker at that point having reached a condition that would not warrant any further expenditures for repairs.

The use of box car loaders having proved successful at certain collieries where they could be utilized for the loading of that class of equipment, such an appliance has been installed at Prospect Colliery, one of the largest of the Company's breakers.

The practice of concentrating power and pumping plants and introducing electricity for haulage, ventilation and pumping, wherever it can be successfully empoyed, is being followed out at the Company's many collieries as rapidly as conditions will justify. At Centralia Colliery an electric power plant has been installed with a capacity to furnish power for haulage and pumping sufficient not only for the present needs of that colliery, but also for other collieries in the vicinity as soon as the plants at those points require renewal. Electric haulage, hoisting and pumping systems are being installed at Austin, Hazleton No. 1, Spring Mountain and Packer No. 4 Collieries.

At Seneca Colliery a new boiler plant has been erected and placed in service. The pumping plants at this point and at Hazleton Shaft Colliery are being overhauled and enlarged to accommodate the increasing volume of water encountered at these mine workings.

The Lehigh Valley Coal Sales Company was incorporated under date of January 22, 1912, for the purpose of shipping and selling the coal mined and purchased by your Company. The authorized capital stock of the Sales Company is $10,000,000, of which $6,060,800, or 121,216 shares, with a par value of $50 each, were fully subscribed to and issued. The stockholders of the Lehigh Valley Railroad Company were given the privilege of subscribing at par to an amount equivalent to ten per cent. of their holdings. After the organization of the company was completed, a contract was executed, effective March 1, 1912, between your Company and the Sales Company, under the terms of which the latter is now purchasing at the breakers and shipping the coal mined and purchased by this Company.

By appropriate court proceedings The Locust Mountain Coal and Iron Company has been dissolved, the charter surrendered and its capital stock, all of which was owned by your Company, cancelled, thus obviating the necessity of maintaning that separate corporation with its attendant expense. Prior to its dissolution, the real estate of that Company, consisting of certain coal lands in Columbia, Schuylkill and Northumberland Counties, Pennsylvania, from which your Company has been mining under lease for many years, together with all its personal property of every description, was conveyed to The Lehigh Valley Coal Company.

On March 1, 1912, this Company redeemed and cancelled the $10,537,000 certificates of indebtedness issued in 1905 to the Lehigh Valley Railroad Company for moneys advanced to it by that Company for capital expenditures. $3,037,000 of said certificates of indebtedness were paid off in cash and the balance, $7,500,000, was taken up by the issuance in lieu thereof to the Lehigh Valley Railroad Company of a similar amount of Fifty-Year Debenture Obligations, maturing March 1, 1962, and bearing interest at the rate of four per cent. per annum, payable on March 1st and September 1st of each year. At the time this transaction was consummated the arrearages of interest on the certificates of indebtedness were paid to the Lehigh Valley Railroad Company at the rate of four per cent. per annum. That amount of the interest which accrued prior to the present fiscal year was charged to Profit and Loss and the balance deducted from this year's Income. In addition, the Income Account of this fiscal year has also been charged with the accrued interest on the debenture obligations.

There were outstanding at the close of the previous fiscal year $1,292,500 short term notes given for the acquisition of property. $200,000 of these notes have been paid off during the year, leaving $1,092,500 of such obligations outstanding at this time.

The usual payments have been made to the sinking funds as required under the several mortgages on the Company's property.

The increase in Property and Plant is occasioned principally by the acquisition of the property of The Locust Mountain Coal and Iron Company, the book value of which was transferred from Securities Owned account following the dissolution of that Company, as previously stated.

The decrease in Current Assets is, in the main, due to your Company having sold its stock of coal on hand to the Lehigh Valley Coal Sales Company and to the collection by June 30, 1912, of the major portions of the accounts due from individuals and the companies for coal sold, the cash resulting from the liquidation of those accounts having been used to retire a portion of the Company's obligations and the payment of arrearages of interest on the certificates of indebtedness, as has been specifically mentioned.

The decrease in Profit and Loss Account results from the charge against the same for arrearages of interest on the certificates of indebtedness that were retired during the year.

Mr. Daniel G. Reid was elected a Director to fill the vacancy caused by the resignation of Mr. J. W. Skeele, and Mr. Fred M. Chase was elected Vice-President and General Manager, effective at the close of the fiscal year, and also a Director, succeeding Mr. S. D. Warriner, who resigned to accept service elsewhere.

The books and accounts of the Company have been verified by certified public accountants, a copy of whose certificate as to the correctness thereof is elsewhere submitted.

By order of the Board of Directors.

E. B. THOMAS,
President.

PROFIT AND LOSS ACCOUNT FOR THE YEAR ENDED JUNE 30, 1912.

	Dr.	Cr.
Credit balance, July 1, 1911		$4,864,199.83
Net income for year ended June 30, 1912		1,162,241.32
Miscellaneous adjustments	$10,924.29	
Interest on certificates of indebtedness accrued prior to June 30, 1911	2,528,880.00	
Balance, June 30, 1912	3,486,636.86	
	$6,026,441.15	$6,026,441.15
Credit balance brought forward, July 1, 1912		$3,486,636.86